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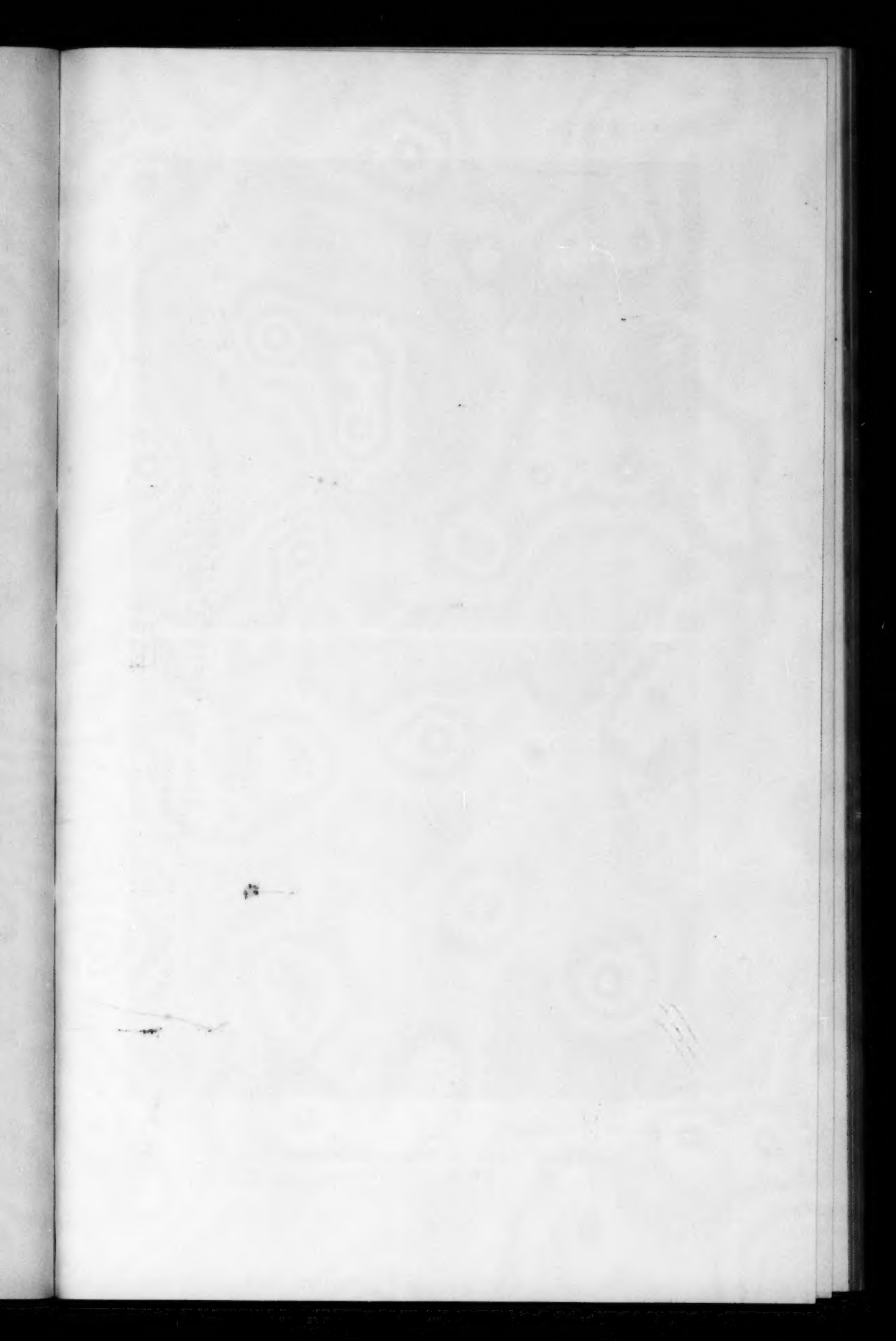
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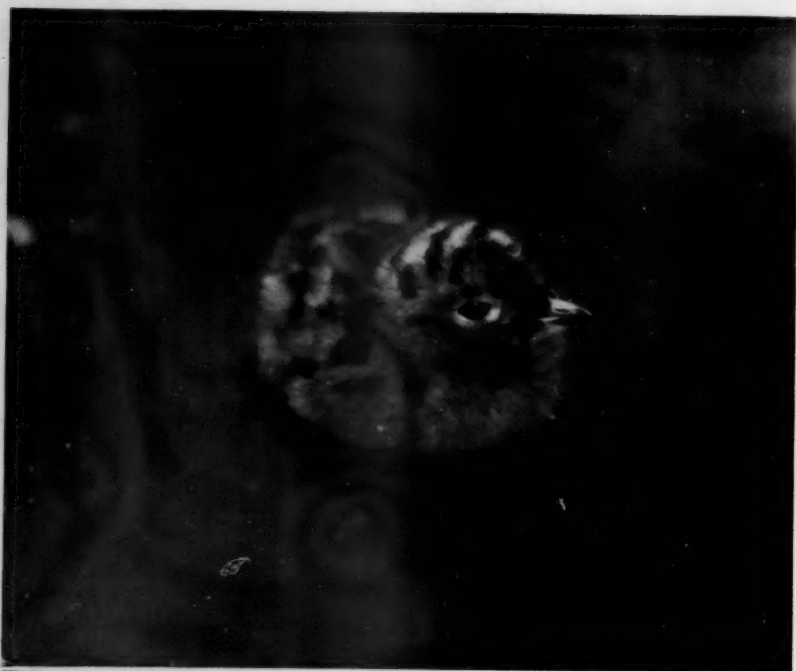
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Photos by Olin S. Pettingill, Jr.

DOWNY YOUNG AND NEST OF BONAPARTE'S GULL
CHURCHILL, MANITOBA.

THE AUK:

A QUARTERLY JOURNAL OF ORNITHOLOGY.

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BREEDING HABITS OF BONAPARTE'S GULL.

BY ARTHUR C. TWOMEY.

Plate XIII.

BONAPARTE'S GULL (*Larus philadelphia*) one of the smallest of our North American Gulls has, in migration, a very wide distribution over the continent and can be found nearly everywhere from Alaska and Hudson Bay, to Yucatan. Its breeding range, however, is confined to the northwestern spruce forest districts of Canada and, although familiar as a fairly common migrant to the greater number of North American ornithologists, but little has been known until lately of its breeding habits.

In the northern migrations of early April these small black headed birds are seen slowly drifting north in small flocks. They arrive at their breeding grounds by the first of May. The first two weeks are spent in locating nesting sites and feeding on the surfaces of the innumerable small lakes which feature their nesting habitats.

The writer has been privileged to be on widely separated breeding grounds of this Gull, on those farthest inland, in Alberta, and on those adjacent to Hudson Bay, a few miles south of Churchill. The Gulls observed inland do not appear to travel in large flocks but seem to gradually drift in, by twos and threes, very quietly and without ostentation. On Hudson Bay, however, they appear in flocks of from twenty-five to fifty and feed on the shoals, apparently without much thought of nesting. As the season advances they become more active and the courting and mating

begin. This is accompanied by much display and commotion. The birds fly about in twos and threes, swooping and diving at one another and uttering their shrill Tern-like notes or they will suddenly alight on dead branches of spruce trees overlooking small lakes and there continue their gymnastics. The love making is accompanied by a great deal of display as two birds crouch low on the branch of the tree and face each other, bobbing up and down, and at the same time screaming their shrill cries, bill wide open, wings slightly raised, and the feathers along the crown and nape of the neck standing on end. Due to the similarity of plumage in the male and female it is very difficult, if not impossible, to distinguish between the sexes of the adult birds. However, during the above performance, very often one bird is seen to be taking the aggressive and is probably the male. After the two have kept this up for two or three minutes they suddenly stop their cries and sit beside one another without further display or one bird, losing interest, may fly away terminating the performance for the time being.

When the nest building begins the two mated birds work together. Though the nest is not large, having an outside diameter of ten inches and inside depth of about one inch, much time seems to be demanded in its construction. The two birds seem to continue their mating antics as mentioned above, but at this time only when one of them has brought in a twig or piece of lichen. The bird with the material is received with a great clamor by its mate. Considerable ceremony seems to accompany the laying of the material in place on the nest. When finally the nest is completed it is only a matter of three or four days until the full set of three eggs is laid, although nests have been found containing two well incubated eggs.

All this time the proud male sits on the top of a nearby spruce tree and watches or goes off to feed on the little muskeg lake that the pair has taken possession of. From the egg-laying time onward both birds strenuously resent any intruder. If a Crow appears the bird on guard immediately goes into action, diving straight at the interloper who departs without seeming to pay much attention to the swift-winged nuisance. If a man appears both birds at once take up the fight by diving straight down from

fifty feet or so at his head, at the same time expressing their excitement by sharp notes of disapproval "Te-er" and the resounding swish of their wings.

These performances were observed within a group of small muskeg lakes in northern Alberta during the latter part of May, 1929, when these Gulls were found nesting in isolated pairs, usually a pair to each muskeg lake. All the nests were in spruce or tamarack from ten feet to twenty feet high. A lone one forty feet above the muskeg is the only nest built more than twenty feet up so far encountered. The nests are usually made of dead tamarack and spruce twigs closely held together by lichen, lined with the outer bark of spruce trees, and placed within a foot of the trunk of a spruce or tamarack tree. Due to the material of which the nest is made and the large branches on which it is built it is extremely hard to locate. The difficulty is enhanced by the fact that both birds are in the habit of flying right at the intruder even if the nest be a quarter of a mile away.

At the colonies visited the writer has rarely found a nest that was not either over the very edge of a lake or some fifty or sixty feet back from the water. The one exception to this rule, however, was in the Churchill district of Manitoba, where nests were found in densely wooded sections with lakes not nearer than two or three hundred yards. At no time has the writer found more than one nest in the same tree. The birds that have come to his notice have all been nesting separately and never less than a hundred feet from one another. In some cases, in central Alberta, the birds were scattered over the margin of small lakes at intervals of a half mile or more. Sir John Richardson, however, stated that at Great Bear Lake he encountered these Gulls "nesting in a colony, resembling a rookery, seven or eight in a tree, the nests being formed of sticks laid flatly."

Roderick MacFarland gives an interesting account of the nesting of this Gull in 1891. "Thirty-seven nests are recorded as having been taken with eggs in them, between the tenth of June and the tenth of July in the wooded country in the neighborhood of Fort Anderson and on the Lower Anderson River. They were all built in trees at various heights (from four to fifteen and even twenty feet) from the ground, and with one exception were composed of

down and velvety leaves and twigs held together by stringy turf. They were made of small sticks and twigs lined with grass and moss. The parents always fly about in close proximity to the nest and scream vehemently when explorers in the interest of science, are obliged to deprive them of their eggs or young and not infrequently shoot one of them. They seldom lay more than three eggs."*

While at Churchill, Manitoba, on Hudson Bay, in the summer of 1931, the writer noted large numbers of Bonaparte's Gulls feeding in the harbor and along the shores of the Bay. They were adults in full spring plumage, and moved about in scattered flocks of twenty-five to fifty. This sight was very familiar until about the twentieth of June after which the flocks were noticed going inland every evening while in the morning they would be seen coming back to continue their feeding on the tide flats.

On July 5 I decided to take a trip inland and see just where they were nesting. Ten miles south of Churchill, I commenced hunting for them and had barely entered the spruce forest when my hat was nearly knocked off by a sudden dive of a Bonaparte's Gull. I did not see the bird so was entirely taken off my guard. A thorough search for a nest was made but no trace of one could be found. However, by this time, at least a dozen birds were swooping and screeching forth their protests. First one would take the aggressive and after it was tired another would appear from nowhere, to dive at my head.

Finally, after much wading through wet muskeg and climbing a dozen trees, a nest was found in a spruce about fifteen feet from the ground. It contained three downy young, apparently not more than a day or two old, and still too weak to stand. As this investigation was proceeding the parents were much excited, screaming and swooping at me in such a manner that it was almost necessary to duck my head.

No more young Gulls were found that day but on July 12 a return visit was made in search of other nests. The adult birds as usual came out of their way to let me know that there were many

* See also a detailed account of the nesting of the bird in 'The Auk' 1926 pp. 288-294, by A. D. Henderson; and in 'The Canadian Field Naturalist,' September, 1931, by F. L. Farley.

more young birds in the vicinity. Another search was at once started but after two or three hours of tiresome tramping it began to look as if it were utterly hopeless to continue the quest in that particular area. However, at this juncture, a single bird suddenly dropped down and began to scream for a minute or so and then was off as though nothing in the world worried it. I noticed it making straight for some scattered spruce about half a mile away, and watched it with my glasses. It soon dropped out of sight, not to appear again. This seemed unusual, so I decided to work over towards it. Before reaching the place, two birds appeared and began the battle. The closer I approached the more determined were they that the intruder should be driven away. This performance of course was all the more evidence that there must be a nest of young in the vicinity. After climbing every spruce tree within a radius of two or three hundred yards, search was again given up. Just about ready to discontinue, I chanced to notice a slight movement in a small pool of water, nearby, where a downy Bonaparte's Gull was found floating around gayly in the middle of the pool. On further investigation a second bird was discovered. With the water only two or three yards in diameter, it was not difficult to secure the birds. They were, however, frightened and had no difficulty in hiding themselves in the tundra which their coloration so much resembled. These two birds were larger than the first young taken and looked as though they were five or six days old. This suggested that the young leave their nests very early, spending the first part of their existence in the small muskeg sloughs. Just how they managed to leave their nest and reach the water was puzzling. Were they carried by their parents or did they tumble out of their nests and make their way to the water? A further unsuccessful search for their nest proved that it could not be closer than two hundred yards. If they tumbled to the ground they would certainly have a very difficult, if not impossible task to make their way over the rough surface of the tundra to water. I did not succeed in obtaining an answer to this problem.

Following is a description of a downy Bonaparte's Gull which I collected, the basis of colors being Ridgway's 'Color Key':—
Specimen No. 200, July 5, 1931; Churchill, Manitoba, Canada.

Back: vinaceous-cinnamon clouded and spotted with irregular blackish brown blotches.

Head: a little lighter, about light pinkish cinnamon; an irregular semi-circular blackish brown patch extending from nape to each side of lower part of crown; remainder of crown is covered with uneven blackish brown spots at base of upper mandible and at each side of throat. Blackish brown line running through eye is broken a little behind base of upper mandible.

Underparts: unmarked except for the dark-brown spot on each side of throat; throat and lower portions of breast light pinkish cinnamon; upper part of breast has a distinct vinaceous-cinnamon band. Flanks and posterior region are of an indistinct gray due to the basal gray of the down. Wings resemble the back except that the forearm has a blackish brown patch at its proximal and as a whole has a darkish tinge, again due to the basal gray of the down. The phalanges are whitish cinnamon.

Bill: in life, dark blue-black with a dull gray flesh-color at base; in skin, brownish tip and beyond the angle brownish flesh; egg-tooth whiter.

Legs and Feet: in life, fleshy-buff with a grayish caste; in skin, dark yellowish brown.

Iris: dark brown.

Camrose, Alberta, Canada.

THE EARLIEST (1805) UNPUBLISHED DRAWINGS OF
THE FLEXIBILITY OF THE UPPER MANDIBLE OF
THE WOODCOCK'S BILL.¹

BY HENRY MOUSLEY.

Two factors are responsible for the present paper, the author's fortunate engagement compiling a general catalogue of the 5,000 original drawings and paintings of mammals, birds, insects and flowers, etc., in the Blacker and Emma Shearer Wood Libraries of McGill University, and his early fondness for matters appertaining to Woodcock lore, without which, the drawings presently to be discussed, would probably never have been specifically noticed. Already, these famous collections have produced pictures of more than passing interest, some of which have already been described by the Librarian, Dr. Gerhard Lomer,² Dr. Casey Wood,³ Dr. Alexander Wetmore,⁴ and the writer.⁵

It was whilst examining these drawings, many of which are contained in albums or books, that the writer came across an old volume containing 310 drawings and sketches by George Cumberland, many of which are most beautifully finished. On the front page of this volume is the following inscription:

"This volume of 310 studies from nature, in various branches of natural history the amusement of many pleasant hours of his father George Cumberland—he presents to his son Sydney, as a proof of his esteem and as an example of vacant hours, not mispent.

June 28th, 1846. G. Cumberland.

G. Cumberland was born 27th November, 1754, died August 8th, 1848.

Sydney Cumberland died March, 1868."

¹ Read before the American Ornithologists' Union, Semicentennial Anniversary, New York, Nov. 15, 1933.

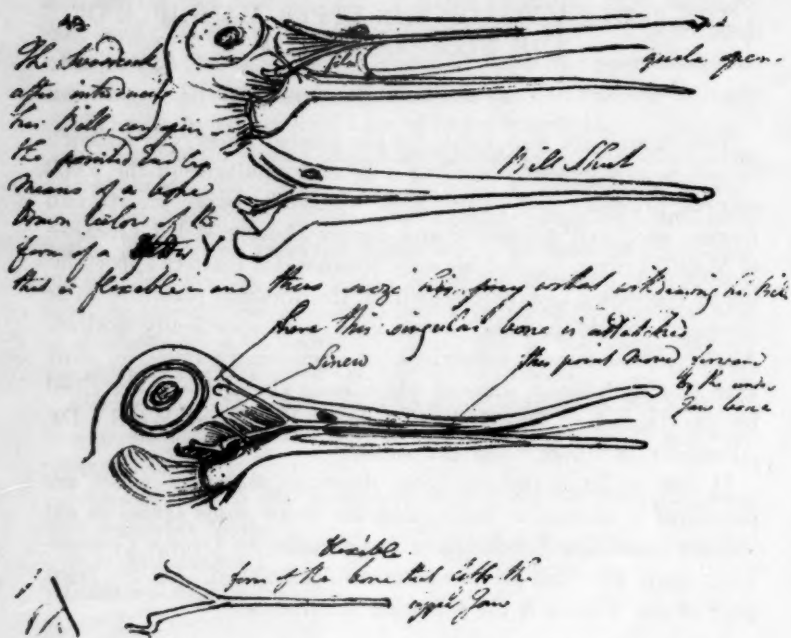
² Feather pictures of the *Commedia Dell'Arte*, by Gerhard R. Lomer, *Theatre Arts Monthly*, Sept. 1930.

³ Lady Elizabeth Gwillim—Artist and Ornithologist, by Casey A. Wood, *Ibis*, July, 1925. Two hitherto unpublished pictures of the Mauritius Dodo, by Casey Wood, *Ibis*, Oct. 1927.

⁴ The Rablé Paintings of Haitian Birds, by Alexander Wetmore, *Auk*, Oct. 1930.

⁵ Catalogue of Original Paintings of Birds, selected from the Emma Shearer Wood Library, McGill University, by Henry Mousley, A.O.U. Meeting, Quebec, 1932.

As will be noticed, the father was ninety-two years old when he presented the book to his son, just two years before his death, the signature naturally being in a somewhat shaky hand.



Many of the drawings are colored, ranging in date from 1798 to 1830, whilst others again, are merely pen and ink, or pencil sketches, all, however, more or less highly finished, and embracing almost every subject under the sun, from elephants to the eyes of birds, accompanied, for the most part, with explanatory notes. All of the drawings were pasted in the book, but not numbered, and it was whilst doing this, that my attention was drawn to those of the Woodcock, Nos. 49, 49a, 52 and 112, none of which, however, is signed, or dated, but from the style of the writing, and kind of paper used, the most important one, No. 49, depicting the flexibility of the upper mandible of the Woodcock's bill, may safely be ascribed, I think, to between 1802 and 1805, as it agrees in all respects with some of the other drawings of this period,

which are either signed, or dated. From the moment I realized the early date of the drawing, I knew I had made a "find" so to speak, as the discovery of the flexibility of the upper mandible of the Woodcock's bill, has apparently been attributed to Gurdon Trumbull in 1890! whereas, the present drawing clearly proves that Cumberland knew about it in 1805 and as we shall see later, Naumann, in 1799, a matter of 91 years earlier! From information kindly furnished me by Mr. Lawrence Binyon of the British Museum, through Messrs. Wheldon and Wesley of London, from whom the book of drawings was purchased by Dr. Casey Wood in 1925, we learn:—that "George Cumberland was born in 1754. He was a cousin of Richard Cumberland the dramatist, and was employed at the Royal Exchange Assurance Office. He studied at the Royal Academy School as an amateur at the same time as Flaxman. Very likely it was through Flaxman that he got to know William Blake, the poet and artist. He became one of Blake's best friends and Blake helped him with the technique of etching. According to Farington's Diary, Vol. 1, he had about £500 pounds a year left him and ran away with a Mrs. Cooper, wife of an architect with whom he lodged. He compromised the matter with Cooper in Paris for one thousand pounds. He published 'Thoughts on Outline,' in 1796, and an album containing 221 drawings, which is in the British Museum, and which includes some of the designs engraved in that work. He also published lithographic views of Italy 1821. The copy of Blake's book 'Europe,' in the British Museum, contains quotations in what has recently been discovered to be Cumberland's writing; and there are letters of his in the Ms. Department of the Museum. In middle life Cumberland went to live in Bristol. He died in 1848. This, which is not all to be found in one book, about sums up what is at present known about Cumberland." I might add, however, that his having resided at Bristol for a time, accounts for the number of sketches the album contains of animals and birds in the Zoological Gardens at Clifton, near Bristol, which brings vividly to the memory of the writer many happy hours spent in those same gardens—whilst pursuing his early academic studies at Clifton College—the grounds of which practically adjoined those of the Zoo, being separated only by a turnpike road.

Now, as I have already remarked, Cumberland, seems to have had an aptitude for drawing everything under the sun, just as the particular subject appealed to him at the moment, or took his fancy, nevertheless, it does seem strange he should have alighted on a subject that no one knew anything about at the time, unless, being a German scholar, he had read Naumann's '*Naturgeschichte der Vogel des nordlichen Deutschlands*,' of 1799, or Supplement of 1804, wherein the flexibility of the tip of the upper mandible of the Woodcock's bill is recorded for the first time. On reading this, Cumberland's love of investigation would naturally be aroused, and he probably proceeded to investigate for himself, not only, the flexibility of the bill, but also, other parts of the Woodcock's anatomy, which would account for the subsequent drawing of the gizzard—which drawing by the way is on the reverse side of that of the bill—together with the separate ones of the head and eyes, also. No matter from what angle the matter is viewed, the fact stands out, that Cumberland's drawing is the very first one to depict the tip of the upper mandible in a raised position, with a description of how this is effected, even if the drawing was made at a later date than 1805—as I have assumed—say after 1811, when Nitzsch's drawing appeared in his '*Osteografische Beitrage zur Naturgeschichte der Vogel*,' a drawing which neither depicts the upraised tip of the bill, or how it might be accomplished, for the very simple reason, as Nitzsch afterwards says in 1816, that the mode of the jaw movement of this species was unknown to him when his drawing was made, and since it was not until 1867, that another one appeared—showing the raised tip and mode of working—that of Hoffman's, it cannot be said that Cumberland derived his information from it, seeing that he died in 1848, or just nineteen years previous to the appearance of Hoffman's work.

No doubt, what has been said regarding the drawing of the bill, may apply equally well to those of the gizzard and under part of the head; the head with "feeler" (the cornu of the hyoid); and the eye; as doubtless they represent the very first drawings of these parts of a Woodcock's anatomy. In conclusion, it may be stated that the present short paper is an abstract, only, of a much longer one the writer has in preparation, embracing a review of all the literature on the subject of the peculiar habits and anatomy

of the European Woodcock (*Scolopax rusticola*) and the American Woodcock (*Philohela minor*) from the earliest times to the present day.

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Montreal, Canada.

MIGRATION AND SOLAR CYCLES.

BY LEONARD W. WING.

THE work of most ornithologists who have attempted to determine the external factors controlling migration, has been centered in correlating migration with the weather. Many have investigated a possible relation of the prevailing local temperature and bird movements, while others have used temperature data from north or south of their stations. Some have used atmospheric pressures, cloudiness of the sky, relative humidity and the like, as workable bases. The conclusions reached seemed to show that a species has a "normal" date of arrival but that departures from this normal are entirely fortuitous.

Few attempts have been made to link migration with the sun which appears to be the ultimate guiding influence in most terrestrial affairs. It is not surprising that the sun has not been considered. Most people consider the sun to be a fixed source of energy. They believe the amount of solar radiation to be constant and to reach the earth with variations due only to unfavorable atmospheric conditions. Even the scientific world once believed this. The measure of solar radiation was called the solar constant. It is now known that the output of radiant energy is not constant but is subject to varying periodicities. The fluctuations in the emission of solar radiation are of relatively small degree and measurable only with delicate instruments. However, it is demonstrable that these variations exert a profound influence over terrestrial affairs.

The most easily noticed cyclic variations in the sun are the sunspot cycles. Sunspots appear as dark blotches on the surface of the sun and move across its face somewhat in the manner of our high and low pressure areas. They were first noticed by astronomers in the early part of the 16th century. Careful record has been kept of the number of sunspots since that time. The data have been compiled, and properly weighted and are known as the Wolf Numbers, after their first compiler.

Analysis shows the Wolf Numbers to have a primary cycle of 11.2 years and a number of other cycles that are multiples or sub-

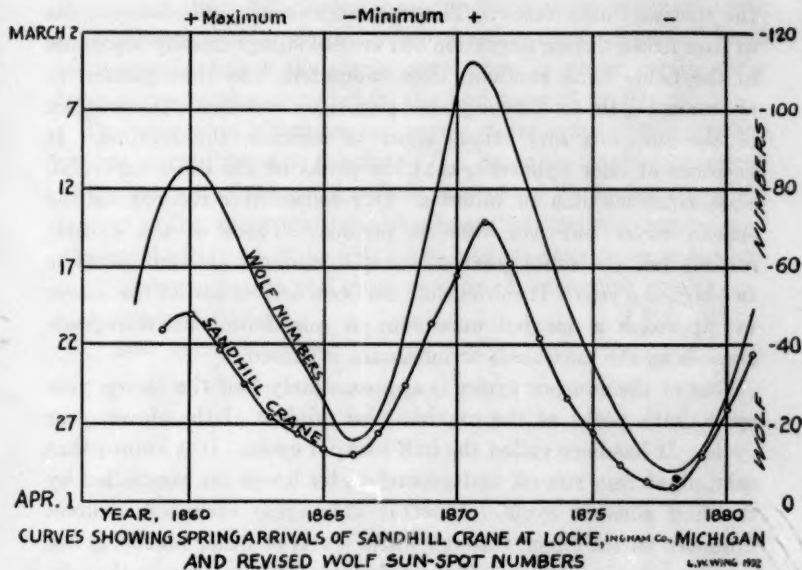
+ Maximum - Minimum + -

March 25
 31
 Apr. 5
 10
 Apr. 15

YEAR, 1906 1910 1915 1920 1925 1928

RESIDUAL CURVE COMPUTED FROM SPRING ARRIVALS OF LOON AT ANN ARBOR, MICHIGAN.

L. H. WING, 1932



The migration data that I have used in this study, have been taken, for the most part, from records covering the Ann Arbor, Michigan, area. In many cases the records go back to 1875. These records have been deposited in the Museum of Zoology, of the University of Michigan, by the various observers and have been compiled for publication by N. A. Wood and A. D. Tinker. The editing of the records was entrusted to me and during the process of editing, I discovered apparent periodicities in the yearly arrivals and departures of various species.

Statistical analysis, discloses these periodicities. It demonstrates the existence of a relationship between the arrivals and departures at Ann Arbor and certain solar activities. The farther the investigation proceeds the more evident it becomes, that the variations in the times of arrivals and departures are ultimately traceable to the sun. Whether the sun is responsible for the so-called normal date of arrival, will be reserved for a later discussion.

The data for the arrival of the Loon, at Ann Arbor, were smoothed by the formula $\frac{2 + 4b + 6c + 4d + e}{16}$. The term Loon refers to

the species, *Gavia immer*. The two races *immer* and *elasson* occur at Ann Arbor during migration but are not subspecifically separable in the field. The residual, thus computed, was then plotted as shown in Figure 1. I have placed plus signs to indicate the maxima of the sunspots and minus signs to indicate the minima. It becomes at once apparent, that the peaks of the Loon curve fall at sunspot maxima or minima. Our consecutive records for the species cover but five sunspot periods. Three of the earliest records fall the exact year of sunspot maxima or minima while two lagged a year. It shows that the Loon arrives earlier the nearer we approach a sunspot maximum or minimum with retrograde arrivals as the maximum or minimum is passed.

One of the sunspot cycles is approximately half the eleven year cycle, with peaks at the maxima and minima of the eleven year cycle. It has been called the half sunspot cycle. It is known that rainfall, stream run-off and ground water levels are controlled by the half sunspot cycle. Whether this cycle exercises a direct influence on the Loon, through water levels or other means, is not readily apparent. It is sufficient, for the present, to note that for

the past twenty-seven years, at Ann Arbor, the Loon has faithfully followed the half sunspot cycle.

Figure 2 shows the residual computed from the data for the spring arrival of the Sandhill Crane, from 1856 to 1884, at Locke, Ingham County, Michigan, adjacent to the Ann Arbor area. The arrivals were recorded by H. A. Atkins, an old time Michigan ornithologist. I have placed plus and minus signs to indicate maxima and minima as in the first figure. I have also added the curve of the Wolf Numbers. An apparent correspondence at once appears. It will be noted that the curve of the Sandhill Crane, exactly parallels the sunspot curve. The greater degree of amplitude of the maximum of 1871 as compared to the maximum of 1861, and of the minimum of 1878 as compared to the minimum of 1866, is mirrored in the Sandhill Crane curve. A striking correspondence!

I have been working with the data for many other species. The two examples I have just given will suffice for our present purpose. In some cases the migration follows the eleven year cycle, while in others it follows the half sunspot cycle as shown in the Loon. In still others, the records indicate a periodicity of uncertain affinities.

In general, closely related birds respond to the same cycle. Land birds usually follow the eleven year cycle in phase, while water birds appear to be governed by the half sunspot cycle.

The manner in which the sun exerts an influence over migration cannot be predicated at this time. It is probable that the variations in the amount of the sun's radiant energy are the basic controlling factors. The investigation also shows that certain normal and abnormal activities of the individual bird are responsive to changes in the solar radiation and gives promise of interesting results.

*Museum of Zoology,
Ann Arbor, Michigan.*

Oct. 1, 1932.

THE SOCIAL ORDER IN FLOCKS OF THE COMMON
CHICKEN AND THE PIGEON.¹

BY RALPH H. MASURE AND W. C. ALLEE.

THE problems centering about the organization of flocks of birds are by no means solved despite the attention they have received. A portion of the pertinent literature to date has been summarized by Allee (1931, 1934) both with regard to the observed facts and their general social implications; hence no general literature survey will be undertaken now. It will suffice to call attention to certain work which is directly antecedent to ours. Schjelderup-Ebbe (1922) has analyzed the organization of flocks of Domestic Chickens and of both wild and tame Ducks (1923). In all of these he found a more or less definite organization revealed by the way in which the birds reacted in contact situations. He recognized a so-called peck-order in which the animal highest in the order pecks and is not pecked in return while that at the extreme bottom of the order is pecked without pecking in return. Throughout the entire order, any individual with the peck-right over another remains steadily dominant over it until by a combat their positions are reversed.

More recently (1931) Schjelderup-Ebbe has extended his observations to include a large number of different sorts of birds both in nature and in various kinds of confinement; he finds that when two birds of one species are together, one is despot and the other is subservient. Schjelderup-Ebbe believes that this sort of despotism is one of the fundamental principles of biology.

The older bird of a flock is usually despot because her matured body gives her strength which the young, partially developed birds lack; even after the latter attain their full size and strength, if of the same sex, the older individual maintains her despotic rights. Between the sexes, the larger males are usually despots over the females. When the two sexes are alike in size and strength and the

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male possesses ornamentation, he is despot; otherwise either may be despot. Often males put on and lose their despotic rights with the assumption and loss of breeding plumage.

We have repeated Schjelderup-Ebbe's observations first on Brown Leghorn Chickens, both males and females but with sexes separate; then with flocks of Pigeons, first with sexes segregated, then when mated, and again with the sexes together. The observations were the result of joint planning and while the senior author was in very close touch with the work throughout, the actual observations were all made and the preliminary summary prepared by the junior author.

Two flocks of Brown Leghorn Chickens were observed in their Whitman Laboratory quarters during January, February and March, 1932. They were housed in pens 14.5 feet long, 5 feet wide and 8 feet high. These pens were in a heated house that was kept between 60° and 70° F. They were each provided with raised roosts which occupied a corner space of 3 by 4 feet. The floor below the roosts was protected from droppings. The cement floor was covered with straw litter which was changed weekly. On a few warm days, the Chickens were given access to separate outside runs which were about 5 feet long and were floored by wire mesh about a foot from the ground to prevent attacks by rats.

All the Chickens were about 10 months old when observations were begun. They had been raised together in the Whitman pens since hatching. One pen contained 11 cockerels and the other at the start contained 26 pullets. Toward the end of January, 12 days after the observations were begun, half of the pullets were removed and on February 27 a Barred Plymouth Rock rooster was added. The flock of cockerels was disturbed only by the experiences of one bird. On February 29, RB was removed because his eye was injured in fighting; he was returned to the flock on March 14 when his eye was completely healed and sight was normal; he was again removed five days later in a much battered condition.

All these Chickens were fed twice daily with mixed grain and in addition the cockerels were given a small amount of grain when the observations were being made, since relatively little pecking was done in the absence of food. In addition to the grain, the pullets were provided with a hopper of mash which remained in the pen

constantly. The cockerels received no mash since by omitting it most of their fighting was avoided.

The majority of the observations on contact reactions were made in the afternoon. The observer sat quietly in an adjoining pen, note pad on knee, and was separated from the Chickens under observation only by ordinary chicken-wire netting. When two animals came into contact with each other and one was pecked and retreated, this was considered to be the subservient member of that particular contact pair. Many times two Chickens would meet without showing any signs of pecking or being pecked; such neutral encounters were not considered in deciding on the peck-order. Often such contacts would start a battle, more often with the cockerels than with the pullets; pecking would be mutual. In these cases the Chicken that gave in and retreated was considered to be subservient to the other. The majority of the pecking contacts were observed over and over. Colored celluloid leg bands furnished a ready means of individual identification by the observer; the birds themselves appeared to recognize other individuals by means that were not always apparent to the human observer.

SOCIAL ORDER AMONG THE PULLETS.

The social order in the flock of 26 pullets had not been determined when, twelve days after the observations began, the flock was reduced to 13. The definite status of any one hen had not been established but the evidence at hand allows a fair approximation of the birds in the upper half of the flock and extreme lower part as follows:

1. W	7. GY	13. WW
2. B	8. BY ₂	
3. RW	9. G	22. Y
4. GY ₂	10. RY	23. BB
5. RY ₂	11. RG	24(?)BY
6. RR	12. BG ₂	25. M
		26. A

Although the observations were insufficient to establish the contact reactions between any one bird and all of its associates, the data at hand show that there was no absolute despot. One bird, GG, was not observed to receive pecks from another individual but

it pecked only A and YY during these observations. YY ranked below the 13 just given and A ranked at the bottom of the indicated order in the larger flock and at the very bottom of the better tested order of the reduced flock: hence it appears that GG cannot be assigned a place in the upper half of the peck-order.

In all the contacts observed in this crowded pen, there was only one reversal. W was seen to peck RY₂ once and the reverse was observed once also. This indicates a strong and stable social organization among the pullets. Pullets of inferior position always gave way to their superiors at the food hopper or water dish. Superiors were often observed pecking food from the bills of their inferiors. M, A, and BB, individuals low in the peck order, spent much of their time on the roost where there were fewer birds and when they did venture onto the floor, they were alert and avoided many pecks by darting away from an approaching hen.

After the flock was reduced to 13 individuals, it was observed for 60 days and the complete order obtained as shown in Table I.

TABLE I. SHOWING THE STATUS OF EACH INDIVIDUAL IN A FLOCK OF
13 BROWN LEGHORN PULLETS ON THE BASIS OF THE PECK-ORDER.

RW pecks all 12:	A, BG, BB, M, Y, YY, BG ₂ , GR, R, GY, RY, RR.
RR pecks 11	: A, BG, BB, M, Y, YY, BG ₂ , GR, R, GY, RY.
RY pecks 10	: A, BG, BB, M, Y, YY, BG ₂ , GR, R, GY.
GY pecks 9	: A, BG, BB, M, Y, YY, BG ₂ , GR, R.
R pecks 8	: A, BG, BB, M, Y, YY, BG ₂ , GR.
GR pecks 7	: A, BG, BB, M, Y, YY, BG ₂ .
BG ₂ pecks 6	: A, BG, BB, M, Y, YY.

YY pecks 4	: A, BG, BB, M.
M pecks 4	: A, BG, BB, Y.
Y pecks 4	: A, BG, BB, YY.



BB pecks 2	: A, BG.
BG pecks 1	: A.
A pecks 0	

It is apparent from the data of Table I that RW is the despot of the flock and that down to YY there is a straight line order; then YY, M and Y form a triangle order below which the straight line order continues to A, the lowest member which pecks none. As in

the larger flock, superiors often ate food from the bills of their inferiors without resistance from the latter. When a hen was sitting on even one or two eggs, it took much more pecking before she would relinquish her position to the superior hen; even so, no reversals in peck order for this or other reasons were observed in the reduced flock. RR, second in the social order, was much given to pecking her inferiors, more so than RW, the ranking hen. The impression of a social order gained in the observations on the large flock is definitely strengthened. The reduction in flock size did not change any of the observed peck-rights. R, which stood fifth in the social order of the reduced flock, had not been observed in contact with any of this group before the reduction took place; it had been seen to peck G and BR and to be pecked by W and RY₂.

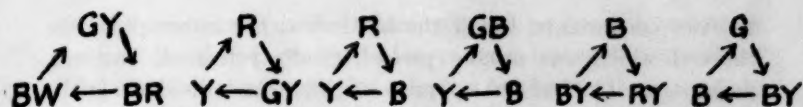
SOCIAL ORDER AMONG THE COCKERELS.

Practically the complete order for the flock of eleven cockerels was determined during the 70 days of observation. The findings are summarized in Table II, which is built on the same plan as Table I, and so allows ready comparison with the social order obtaining among the pullets. In this table the characters in *italic* indicate that these peck-rights were not settled; those in heavy faced type indicate that there was one reversal of the peck-order observed in each of these cases.

TABLE II. SHOWING THE SOCIAL ORGANIZATION OF A FLOCK OF 11 BROWN LEGHORN COCKERELS ON THE BASIS OF THEIR PECK-ORDER.

BW	pecks 9 :	W, BY, G, RY, B, BG, Y, R, GY.
BR	pecks 8 :	W, BY, G, RY, BG, Y, R , BW.
GY	pecks 8 :	W , BY, G, RY, B, BG , Y, BR.
R	pecks 7 :	W, <i>BY</i> , G , RY, B, BG, GY.
Y	pecks 6 :	W, BY, G, RY, BG, R.
GB	pecks 5 :	W, BY, G, RY, B.
B	pecks 4 :	W, G, RY, Y.
RY	pecks 3 :	W, BY, G.
G	pecks 2 :	W, <i>BY</i> .
BY	pecks 2 :	W, B.
W	pecks 0.	

In this order there are six triangle situations as follows:



These triangle situations run almost through the whole gamut of the social order. Those high or low in the peck-order are least involved and those in the middle of the order are most concerned. BW, the highest ranking cockerel is involved in one triangle; W, the lowest, in none; B, one of those near mid-rank is involved in four and Y, in three.

The social organization of this flock of cockerels was not as stable as was that of the pullets. After 70 days of observation, peck-rights were still unsettled as indicated in Table II by the letters in *italic*. They were those of BY-R and BY-G. BY was observed to peck G on six occasions and the reverse was observed on eight occasions. BY was likewise observed to peck R on six occasions and the reverse was true for the same number of contacts. The place of these cockerels must therefore be assigned tentatively and they are placed in their logical positions with reference to other relations which seemed to have been settled.

Four other cases of reversal were observed and are indicated in Table II by heavy faced type. In these the reversal occurred but once in each case. It is of course possible that there may have been an error in observation but the likelihood is no greater here than with the pullets and we are inclined to think that these reversals indicate a less stable and fixed peck-order in the cockerels as compared with the pullets.

On account of a fight which incapacitated BR, other consequences of which will be given later, this individual was removed before the peck-order between him and B had been observed. The other relationships indicate that B would probably have been pecked by BR, but one cannot be certain of this without direct observation.

The cockerels were much more given to fighting than were the pullets. Many times two of them would face each other and start to fight even though the peck-right records showed that the relations between the two were fairly definitely settled. Usually such combats were interrupted by another individual walking between

the two combatants, but if the battle was not interrupted, the cockerel which was usually pecked, finally retreated, but not, perhaps, until he had put up quite a fight. The individuals in the lower positions of the social order have a difficult life; they are continually being pecked by their superiors. When food was given, W, which stood lowest in the order, never ventured near those cockerels that were eating but waited until they had left the food and then ate what remained. W also spent most of his time on the roost where the others, if present, seemed to be more tolerant of their inferiors. As a rule very little pecking took place among the cockerels on the roost even though they were somewhat crowded at times. When W did venture on the floor of the pen, he was constantly running to avoid contacts with the other members of the flock. BW, which was first in the order, seemed more inclined to peck his inferiors than did any other cockerel; about half of the observed pecks were delivered by this individual.

The order among cockerels differs from that found among the pullets in the type of organization. That of the pullets is fairly regular while that of the cockerels is built about triangular relationships. For a time there was no despot among the males and in fact BW, the cockerel standing highest, was pecked by BR who stood just below him in rank. On February 29, this latter individual and Y started to fight, as they had many times before, but during this battle BR received a hard peck in the eye which closed the left eye and he retreated. He was then removed to another pen and two weeks later on March 14 he was replaced with the group of cockerels which he had almost dominated. At this time his eye was entirely healed and his sight was apparently normal; he was found to have lost his position in the peck-order completely. In fact he now stood lowest of all and was even pecked by W, which had not been observed to peck a fellow cockerel before. One or all of the following factors may have entered into his loss of status: he had lost an encounter; he had sustained a severe injury and he had been absent from the flock for 14 days. Whatever the reason, he was persecuted so badly that on March 19 his injuries prevented him from standing and he was removed permanently to save his life.

During the five days BR was in the pen after his recovery, he

avoided contacts with the others as much as possible and spent much of his time partially hidden under a low shelf upon which the water dish was kept. Not once was he observed to attempt to assert his former high position. After BR was removed no change was observed in the pecking. The absence of BR made BW despot. This change in the relations of BW did not seem to affect his behavior towards the other members of the flock.

OBSERVATIONS ON PIGEONS.

The observations on Pigeons were made upon 14 White King Pigeons, a heavy squab-breeding variety. The birds were equally divided as to sex. They were unmated but sexually mature when obtained from a reliable dealer. They were housed in a large out-of-doors pen about 30 ft. long by 18 ft. wide and 10 ft. high. The pen extended between a laboratory greenhouse and a brick building. It was closed by wire on both sides and on top. A small wooden roost and nesting cote was furnished and both runways and cote were divided into two equal parts by wire netting and boards during the periods when the Pigeons were sex segregated.

The majority of the observations were made at feeding time since the close contacts incident to feeding greatly increased the opportunities for pecking. The group of males was observed for 24 days and the females 30 days. After these observation periods, which ran concurrently, the partition was removed and the two groups were allowed to be together.

Soon after the observations on the sex segregated groups were started, two of the females simulated mating. One, GW, took the part of the male and the other, BW, that of the female.¹ Twelve days after mating both of the birds laid eggs which were removed. During the month that the sexes were together, five pairs mated; three of these matings resulted in fertile eggs that were hatched out before the sexes were again segregated for a second observation period that lasted for 28 days. RY and BY of the females and B and Y of the males did not mate.

OBSERVATIONS ON MALES AND FEMALES WHEN COMBINED.

When the sexes were united into a common flock, five pairs of the

¹ A common occurrence according to Whitman, 1919, p. 28.

Pigeons soon mated. Thereafter practically all the pecking was done by RY and BY, the two unmated females. The males were stimulated by the females and chased them almost continuously when they were not on the nests. Under these conditions the mated females were constantly running away from the pursuing males, eliminating most of the contacts between males and females, particularly between those belonging to different pairs. The resulting picture is of a flock composed now of couples, each couple with but few contacts with other couples.

The two unmated males were in about the same social position as were the mated ones. Both were stimulated by the presence of the females and were continually courting them. BY and RY, the two females that did not mate, were killed at the end of the post-mating observations and examined for any abnormalities of gonads which might show them to be intersexes. On gross examination by an experienced worker¹ both of these birds showed normal female gonads.

THE SEX SEGREGATED GROUPS.

Neither the segregated males nor the females showed a definite peck-right such as has just been reported for Chickens and such as Schjelderup-Ebbe reported for Chickens and Pigeons and many other birds as well. In our pens both the sex segregated groups showed a relationship which we shall call peck-dominance. Where two individuals peck back and forth, now one retreating and now the other, the one that is observed to retreat the fewest times is said to have the peck-dominance for that particular contact-pair. In only a few of the relationships observed was there a definite peck-right in which one of the contacting individuals does all the pecking and the other does all the retreating. The more usual relationship with these Pigeons was to have the pecking frequently shifting from one to the other of any given contact-pair of birds. The interval between such reversals varied from a few minutes to several days. It was not uncommon to see one bird being chased by another at the beginning of an hour of observation and itself chasing the former dominant before the end of the hour. To be counted as an actual reversal the temporarily subordinate indi-

¹ The examinations were made by Dr. L. V. Domm.

TABLE III. PECK-DOMINANCE IN A FLOCK OF SEVEN FEMALE PIGEONS.

Pigeons	Pre-mating period.			Post-mating period.			Grand Total
	14 days	20 days	28 days	32 days	16 days	22 days	28 days
BY:BB	15:11	23:17	30:34	36:38 ¹	5:7	5:9	7:11
BB:GW	10:11	12:19	14:28	15:37	7:22	9:44	10:49
BB:BW	1:6	3:12	6:26	9:41	11:22	11:25	11:30
BB:BR	1:7	2:14	3:20	3:26	0:6	1:8	4:36
BB:RY	1:6	2:12	7:27	16:47	42:17 ²	48:21	53:22
BY:GW	9:12	9:21	10:33	17:41	5:20	6:28	7:39
BY:BW	2:8	4:19	5:35	9:42	0:10	2:16	6:24
BY:RW	5:10	8:14	9:25	11:37	2:16	4:33	4:50
GW:BW	1:7	2:8	2:8	4:13	3:9	7:12	8:14
BR:GW	6:3	7:6	7:7	9:10 ¹	2:21	3:21	4:21
GW:RW	2:9	3:10	5:10	6:12	2:8	3:9	3:10
BY:BR	11:9	14:15	15:20	17:24 ¹	0:16	0:21	0:31
BR:BW	1:3	2:7	4:8	7:10	1:0 ²	3:1	5:2 ³
BW:RW	2:6	2:6	4:6	6:8	1:0 ²	2:3	2:6 ³
BW:RY	1:2	1:4	3:6	10:13	41:0 ²	48:2	53:3
RW:BR	1:3	1:3	1:3	3:4	0:1	0:1	0:2
RY:GW	2:0	4:1	5:4	7:10 ¹	9:47	11:49	11:49
RY:RW	2:0	3:1	7:4	8:10 ¹	0:39	0:46	0:51
BY:RY	0:2	0:7	2:22	20:33	68:13 ²	76:16	83:18
BR:RY	0:3	0:3	2:5	8:7 ¹	33:1 ²	36:3	40:4
BB:RW	0:5	0:6	0:18	0:23	1:10	1:11	1:12
<i>Order of Dominance.</i>							
BB(6)	BB(6)	BY(6)	BY(6)	BY(6)	RY(6)	RY(6)	RY(5½)
BY(4)	BY(5)	BB(5)	BB(5)	BB(5)	BY(5)	BY(5)	BY(5)
GW(4)	GW(4)	GW(3)	RY(3)	RY(3)	BB(4)	BB(4)	BB(4½)
BR(3)	BR, BW,	BR, BW,	GW, BR,	GW, BR,	GW, RW(2)	GW, BW(2)	GW(2)
BW, RW(2)	RW(2)	RW(2)	BW(2)	BW(2)			BW, BR
RY(0)	RY(0)	RY(0)	RW(1)		BW, BR(1)	RW, BR(1)	(1½)
							RW(1)

¹ Peck-dominance changed in pre-mating observations.² Peck-dominance changed during mating period.³ Peck-dominance changed in post-mating observations.

vidual must actually retreat from the attack of a bird from which it had formerly retreated: merely pecking back and forth was not so considered. Such mutual peckings were frequently observed. The individual that did the pecking, whether male or female, usually showed a swelling of the crop, cooing and bowing not unlike the mating behavior.

The actual observations are summarized in Tables III, IV and V. The longer tables were constructed as follows: As with the Chickens, the individuals are represented by letters and are arranged at the left of the table in the order that indicates the relative dominance of the different individuals at the end of the first period of observation. The more dominant individuals are listed to the left in any given pair. The successive columns give the number of times of observed peck-dominance at the end of the indicated number of days from the beginning of observations. Each table is divided by the period in which the birds were mated into a pre- and a post-mating period.

Some of the observed relationships show only slightly greater peck-dominance on the part of one bird than the other of a given pair. Obviously great significance cannot be attached to these cases. Some measure of their significance is given by the regularity with which the same bird continues to be dominant in its relations with another individual.

THE FLOCK OF FEMALES.

In the relations between different females which are outlined in Table III, of the 21 possible contact-pairs 16 showed the same individual had the greater peck-dominance during the 32 days of the pre-mating period. During the mating period, 6 reversals of dominance occurred, two of these, those in which RY was not concerned, showed another reversal before the end of the post-mating season observations. In all, 11 of the 21 possible contact pairs, showed at least one reversal during the entire time of observation. Three of these pairs showed two reversals during this time. The reversals that occurred during the pre- or post-mating observations were all shown by contact-pairs in which there was but slight difference in the peck-dominance; changes during the mating period occurred in the case of RY even though the peck-dominance seemed to have been firmly established.

The position of this Pigeon in the social organization shows some of the elasticity of the system. For the first 26 days of observation, RY stood at the bottom of the peck-dominance order. In the last six days before mating, RY became slightly dominant over BR, GW and RW, all of which stood low in the social order. After the month of mating during which RY remained unmated, she was clearly dominant over the whole group. This change in the position of RY accounts for four of the six reversals that took place during the mating interval. The summary of the pre- and post-mating season position of this bird in the flock is of value and is given in Table IV.

TABLE IV. THE PRE- AND POST-MATING SEASON POSITION OF RY
WITH RELATION TO THE OTHER MEMBERS OF THE SAME FLOCK.

Pairs	Pre-mating	Post-mating	
	$\begin{smallmatrix} \rightarrow \\ \leftarrow \end{smallmatrix}$	16 days $\begin{smallmatrix} \rightarrow \\ \leftarrow \end{smallmatrix}$	28 days $\begin{smallmatrix} \rightarrow \\ \leftarrow \end{smallmatrix}$
RY:BR	7:8	1:33	4:40
RY:BY	33:20	13:68	18:83
RY:RW	8:10	0:39	0:51
RY:GW	11:10	9:47	11:49
RY:BW	13:10	0:41	3:53
RY:BB	47:16	17:42	22:53
RY:ALL	115:74	40:270	58:329

In the 32 days of observation of the pre-mating flock of females, RY was dominant about two-thirds as many times as it was subordinate; in the 28 days of observation of the post-mating flock composed of the same individuals, RY was dominant over five times as frequently as it was subordinate. In each of its pair-contact relationships, in the post-mating flock, it clearly held peck-dominance without having absolute peck-right except with RW.

The other important changes in the peck-dominance order following the mating month were apparently a result of RY's move to power. BY, the other Pigeon which did not mate, had been the most dominant of the lot during the last half of the pre-mating period; it now ranked second to RY. BB likewise sank one place in the social order from second to third.

The habits of the birds may control their position in a social order arranged on the basis of total number of pecks received and

administered. Thus in the pre-mating flock BB always seemed to do the pecking when she was at the entrance of the roost: when BY tried to enter she would be pecked and would retreat. On the ground, however, BY was usually dominant. As long as BY tried to enter the roost during the day time, she lost in a majority of her contacts with BB and the latter stood at the head of the social order. Later BY did not try to gain entrance to the roost except at night: rather she stayed on the ground where she was usually dominant. This change in the behavior of BY during the first period of observation, shifted the social dominance from BB at the beginning to BY just before the mating period.

At the beginning of the observations RY was very peaceful: she gradually became more aggressive, and as stated before, became despot of the post-mating period flock. As despot, she usually stood in the pan of food at feeding time and drove the others away between times of taking mouthfuls of food.

The social relationships of the subordinate members of the female flock of seven Pigeons are shown in diagrammatic form in Fig. 1. Fig. 1A brings out some of the intricate relationships that may exist in such a flock. The relationships existing in the post-mating flock (Fig. 1C) and when all the information collected is considered together (Fig. 1B) are more simple.

Individuals differed widely in the number of contacts with other birds. In general, Pigeons low in the social order had fewer encounters with other members of the flock than did those of high social rank. If all the observed contacts in both observation periods are considered, the three birds ranking highest had 1407 observed pair-contacts, while the three ranking lowest had only 822 such contacts. Those high in the social rank met each other more frequently than did those ranking lower. Again using all the observations at hand, RY, BY and BB had 384 pair-contacts with each other while in the same length of time, RW, BW and BR, low in the social scale, were seen to have only 55 such contacts between themselves. BY and RY, leaders respectively in the pre- and post-mating flock, met as a pair 154 times, while RW and BR, low in the social scale, with otherwise equal opportunities, met only 9 times.

The relationships existing between the total number of pair-

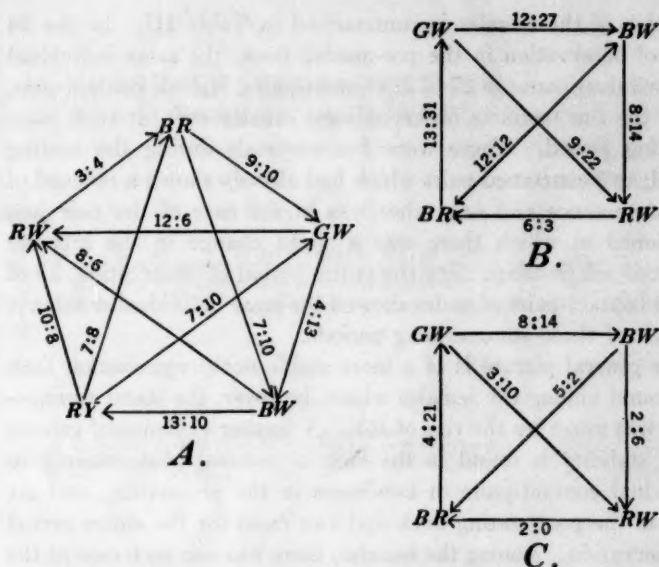


Figure 1. Relationships among those lowest in the social order in the flock of females. Arrows point to the subordinate birds. Numbers show the observed times of dominance and subordination. Thus BR dominated GW 10 times and was subordinate to GW 9 times in their pair-contacts.

A. The lower five birds in the pre-mating flock: all these were dominated by BY and BB.

B. The lower four birds for the entire period of observation; all of these were dominated by RY, BY and BB.

C. The lower four birds in the post-mating flock; all these were dominated by RY, BY and BB.

contacts and place in the social order is again illustrated by the behavior of RY before and after the mating period. In the pre-mating flock when she was low in social rank, RY had in all 189 pair-contacts, an average of 5.9 per day. In the post-mating flock in which she occupied the highest social rank, she engaged in 387 such pair-contacts, an average of slightly less than 12 per day.

THE FLOCK OF MALE PIGEONS.

The pair-contact behavior of the flock of male Pigeons is summarized in Table V in practically the same manner in which the

behavior of the females is summarized in Table III. In the 24 days of observation in the pre-mating flock, the same individual retained dominance in 17 of 21 contact-pairs. In one contact-pair, W:B, the few contacts observed were exactly even at each summarizing period. There were five reversals during the mating period; two concerned pairs which had already shown a reversal of peck-dominance and one other was in the case of the pair just mentioned in which there was a slight change in the hitherto balanced relationship. For the entire period of observation, 15 of the 21 contact-pairs of males showed the same individual dominant at each of these summarizing periods.

The general picture is of a more stable flock organization than was found among the females where, however, the social arrangement was upset by the rise of RY. A further evidence of greater social stability is found in the lack of reversal of dominance in individual contact-pairs in two cases in the pre-mating, and six cases in the post-mating flock and two cases for the entire period of observation. Among the females, there was one such case in the pre-mating, one in the post-mating flock and none that held so throughout the observations.

As with the females, the change in peck dominance during the pre-mating period did not concern pairs which had shown a high degree of uniformity in dominance. In the mating period something happened to BL, which had ranked near the top in the pre-mating flock; thereafter, it ranked below Y, YY and G. Its relations with G had not been clearly defined in the pre-mating period; it had definitely dominated YY and had dominated 15 out of 24 observed contacts with Y. This change in status of B1 accounted for three of the five shifts during the mating interval. B and Y remained unmated as did RY and BY of the females. Y's standing in the flock improved following the mating period while B remained at the bottom of the social order.

The peck-dominance which had been somewhat confused in the pre-mating flock (Fig. 2A) became a regular sequence in the post-mating period with Y having peck-dominance over all the rest and with B showing no regularity in dominance in pair-contacts. As with the females, some of the males showed a greater tendency toward dominance in certain spatial positions. YY stood higher

TABLE V. PECK-DOMINANCE IN A FLOCK OF SEVEN MALE PIGEONS.

Pigeons	Pre-mating period.				Post-mating period.			Grand Total
	12 days	18 days	24 days	16 days	22 days			
BL:G	10:8	14:12	19:19 ¹	15:3 ²	22:9			41:28
G:W	4:8	4:11	5:14	1:38	1:41			6:55
G:Y	8:8	12:14	15:20 ¹	13:12 ²	21:13			36:33
G:B	3:8	3:14	4:16	0:5	0:9			4:25
BL:W	2:8	2:12	3:19	3:9	4:13			7:32
BL:YY	4:13	7:30	18:30	21:3 ²	28:8			36:38
BL:Y	4:7	6:11	9:15	22:2 ²	26:4			35:19
W:YY	13:18	22:20	28:23 ¹	24:3	25:3			53:26
R:W	7:10	7:16	8:22	2:11	2:12			10:34
YY:R	5:20	7:28	13:45	5:16	8:21			21:66
YY:G	8:11	11:30	17:47	20:41	24:51			61:98
R:B	1:15	1:20	2:22	1:5	1:5			3:27
G:R	8:9	12:18	20:28	13:28	16:30			36:58
BL:R	8:9	10:18	13:26	8:26	8:31			21:57
Y:YY	5:10	11:19	15:26	9:16	9:21			24:47
Y:W	2:7	4:9	5:12	0:14	0:24			5:36
Y:B	7:9	9:11	10:12	0:4	0:10			10:22
Y:R	12:14	16:19	21:25	7:15	9:26			30:51
W:B	1:1	1:1	2:2	0:1 ²	0:1			2:3
BL:B	0:8	0:13	0:14	0:7	0:11			0:25
YY:B	0:11	0:20	0:29	0:9	0:11			0:40
<i>Order of dominance.</i>								
	B(5) Y(4½), G(4½)	G(5), BL(5) YY(4), Y(4)	BL(5½) G(4½) YY(4), Y(4)	Y(6) YY(5) G(4)	Y(6) YY(5) G(4)		Y(6) YY(4), G(4), BL(4)	
	YY(3) R(2) W(1½) B(½)	R(2) W(½), B(½)	R(2) W(½), B(½)	BL(3) R(2) W(1) B(0)	BL(3) R(2) W(1) B(0)		R(2) W(1) B(0)	

¹ Peck-dominance changed in pre-mating observations.

² Peck-dominance changed during mating period.

in the social order when near the food pan and W when at the entrance to the roost.

Like the cockerels, the male Pigeons were inclined to fight more than were the females. The Pigeon fights were less severe. At times two males would indulge in a rapid pecking back and forth with neither giving way; such encounters were recorded without showing dominance. It was the individuals high in the social ranking that showed such behavior.

As with the females, the males lowest in the flock order had fewer pair-contacts than did those higher in social rank. B and W, which were consistently at the bottom of the order showed a total of 425 such contacts with other members of the flock while Y and YY, leaders of the post-mating flock showed 797.

In neither the flock of males nor of females, did the social rank necessarily run parallel to the number of pair-contacts. With the females, BY showed more such contacts than did RY although the latter clearly outranked her in the post-mating flock and for the entire period of observations. Similarly among the males, YY which held second place in the post-season flock had a total of 520 observed pair-contacts while Y, the more dominant individual in the latter flock and for the whole period of observations, showed only 338 pair-contacts in all. R, third from the bottom of the post-mating flock showed 404 such contacts.

Despite this irregularity, the general relationship held and the individuals high in the social order showed the greater number of pair contacts. The four ranking males had an average of 298 pair-contacts while the three subordinate ones showed a mean of 252. These three subordinates, R, W and B, had only 86 pair-contacts among themselves while, Y, YY and G, the dominants of the post-mating flock had a total of 299 such contacts. This substantiates the observation with the females that the subordinate members have fewer contacts with each other or with the group as a whole than do those high in the social scale.

The largest number of pair-contacts among the males was between YY and G, a total of 159. These birds ranked second and third in the post-mating flock. The lowest number of such contacts was between B and W, a total of only 5 between these two lowest ranking birds. With the females the similar records for greatest

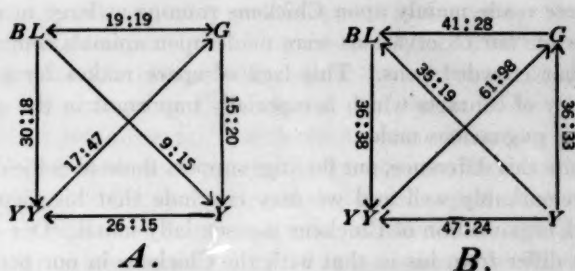


Figure 2. Relationships among those highest in the social order in the flock of males. As in Fig. 1 arrows point toward the subordinate birds and numbers show observed times of dominance and subordination.

A. Social order of the four more important males during the pre-mating period. All have peck-dominance over the remaining three.

B. The social order for the same males based on combined results from both periods of observation.

and fewest contacts between two individual birds rested with the highest and two of the lowest ranking birds respectively.

No one of the males showed as extreme a change in social status during the period covered by the observations as did RY among the females; BL came nearest. From being among the first rank in the pre-mating flock he came to occupy definitely the fourth place in the post-mating season observations. His pair-contacts averaged 7.7 per day for the first period and 7.0 for the latter one. The decrease in number of contacts with lowered social status while supporting the observations on RY of the females, is too slight to be certain of significance.

DISCUSSION.

The interrelations between the different phases of this investigation have already been discussed in close connection with the data. There remains the placing of these data in relationship with other published work, particularly that of Schjelderup-Ebbe, and the suggesting of some of the more general significance of the facts which have been revealed by such studies.

In making comparisons with Schjelderup-Ebbe's work, it must be remembered that his studies on the flock organization of Domestic Fowls are much more extensive than are our own and that

they were made mainly upon Chickens running at large in roomy yards while our observations were made upon animals confined in somewhat crowded pens. This lack of space makes for greater frequency of contacts which is especially important in the case of the more pugnacious males.

Despite this difference, our findings support those of Schjelderup-Ebbe remarkably well and we may conclude that his picture of the flock organization of Chickens is essentially sound. Our observations differ from his in that with the Chickens in our pens, the ranking cockerel or pullet did not necessarily have a less pugnacious disposition than was shown by other high ranking but subordinate members of the flock. RW, the despot of the pullets, did as much or more pecking than did any other, and BW, first in order at all times and later despot of the flock of cockerels, was by far the most vicious of all in his relations to the other cockerels,

Our greatest disagreement with Schjelderup-Ebbe comes in the work with Pigeons, where we have to modify his conception of peck-right to include a situation in which it is the rule for inferiors to peck superiors and for the latter to retreat at times before the attack of an individual which is more usually subservient in its contact-pair relations with that particular bird. At times even after many such encounters, the dominance and subordination relations remain wholly unsettled. Usually, given sufficient time for contact relations and for their observation, the order becomes fairly definitely settled, but in the majority of these cases the subservient individual at times successfully attacks the dominant member of the contact-pair and forces it to retreat without, however, causing a permanent reversal of peck-dominance. Under these conditions, social ranking is apparently not determined with a high degree of finality at the first social contact of two individuals but is a matter of gradual development.

The fairly high degree of regularity in the peck-dominance revealed in Tables III and V is evidence that the relationship here revealed is a variation of Schjelderup-Ebbe's principle of despotism rather than representing a different fundamental principle. Absolute despotism is lacking in the relations revealed among these Pigeons since the dominance in a given contact-pair, while usually remaining with one individual in a majority of its contacts with

another, is yet subject to certain spatial restrictions in some cases and to temporary reversals for unknown causes in others.

Another difference in our report from that of Schjelderup-Ebbe lies perhaps in the realm of our personalities. We prefer to record our observations objectively without reading into them underlying motives in terms of such human traits as courage, fear, etc. The similarities between the social organization of these flocks of birds and those existing in human social circles are striking and one is constantly tempted to make anthropomorphic interpretations. Experience with other phases of animal behavior, however, compels us to use great caution in interpreting the behavior of one animal as being motivated by forces effective with another.

Unfortunately the working conditions available in our city location do not allow us an opportunity to test the relationship between social dominance of the type we have been discussing and flock leadership in group activities. Fischel (1927) has reported observations with Chickens covering this point. In his studies, groups of hens were observed in a large orchard where the animals moved about, according, in part, to the lay of the land and, in part, according to inner stimuli which were not analyzed. Fischel has evidence that among such groups, the group despot is not necessarily the group leader; in fact the leadership changes readily and only exceptionally is the same individual long at the head of the flock. The group despot, on the contrary, rarely changes.

There is evidence of social coherence in the groups that Fischel observed, since he found that the leader is dependent on followers; she goes little further than the other hens follow.

Neither do we have definite evidence concerning the relationship between position in the peck-order and relative intelligence as measured by ability to learn a given problem. Katz and Toll (1923) found evidence that hens high in the peck-order also stood high in relative intelligence. We have not collected sufficient data to permit a statement on this point.

The general significance of social organization such as we have been discussing deserves brief comment. The similarity to certain aspects of human society is close enough to be immediately apparent. This does not mean that human social life evolved from a

bird-like flock organization nor that both human and bird societies have developed from a common social pattern. It does mean, we think, that it is no longer possible to regard human, or avian society for that matter, as something definitely unique. These studies do not support the contentions of Rabaud (1931) that there is nothing to indicate that the animal living in a society has evolved further than the solitary animal since each behaves as if alone! Rabaud states further that there are no collective performances properly so-called among animals other than men; that such unions as are formed come about without the creation of anything which can be called social, since language is lacking.

Unless we are greatly misled, these flocks of Chickens and Pigeons which we have observed represent a condition in which actions speak louder than words and proclaim a social organization similar in some respects to that found among men in which the same principle often holds. We are not prepared to admit the entire lack of voice control in these social groupings of birds, but that is outside the field of our immediate interests and at least for Pigeons has been adequately discussed elsewhere (Craig, 1908).

SUMMARY.

Following leads furnished by the work of Schjelderup-Ebbe, the social organization has been studied as it exists in flocks of Brown Leghorn Chickens and of White King Pigeons. The results obtained are:

1. A social order exists in all the sex-segregated flocks studied. These included Brown Leghorn pullets, Brown Leghorn cockerels, female Pigeons and male Pigeons.
2. The social organization of the cockerels was more complex and was not as definitely organized as was that of the pullets of the same strain and age.
3. When Pigeons were allowed to mate, the resulting picture was of a flock composed mainly of couples, each couple with but few contacts with other couples. The majority of the pecking in such a flock was done by two unmated females.
4. The social order among both male and female Pigeons was based on peck-dominance worked out after many contacts rather than upon an initial combat with one member of any given contact-

pair regularly dominant thereafter. The latter relationship is characteristic for Chickens.

5. The Pigeons standing high in the social order have more social contacts than do those low in the scale.

6. In general our results support those of Schjelderup-Ebbe. The exceptions to this statement and some of the general implications of the work are discussed briefly in the last section of the paper.

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TWENTY-TWO YEARS OF BANDING MIGRATORY WILD FOWL AT AVERY ISLAND, LOUISIANA.

BY E. A. MCLHENNY.

I BEGAN trapping and banding migratory wild fowl in January, 1912, using at first strip bands made of pure tin with a lead seal. These were private bands, and although a large number of them were placed on Ducks of various kinds not very many returns were received, probably due to the fact that the bands were private.

On February 14, 1916, I began using bands of the American Bird Banding Association, whose headquarters were at the American Museum of Natural History, New York.

In 1921 the work of the American Bird Banding Association was taken over by the United States Bureau of Biological Survey, and from then until now I have coöperated with the latter. My records go back more than twenty years, and in that time much valuable data on the life-history of our wild fowl has accumulated.

Of migratory wild fowl I have banded twenty-one thousand, nine hundred and ninety-six individuals between January 1912 and December 31, 1933, covering nineteen species as follows:

Greater Scaup	Mottled Duck	Red-head
Lesser Scaup	Dusky Duck	Canvasback
Ring-neck	Pintail	Wood Duck
Widgeon	Blue-winged Teal	Blue Goose
Gadwall	Green-winged Teal	Lesser Snow Goose
Mallard	Spoonbill	Florida Gallinule
		Coot

From these banded fowl there have been returned from birds killed or otherwise captured, up to December 31, 1933, two thousand, one hundred and sixteen bands. These returns cover pretty well all parts of North America.

Bands were returned from thirty-three states as follows:

Alabama	Colorado	Florida	Indiana
Arkansas	California	Georgia	Idaho
N. Carolina	N. Dakota	Illinois	Kansas
S. Carolina	S. Dakota	Iowa	Kentucky

Louisiana	Maryland	Ohio	Tennessee
Missouri	Michigan	Oregon	Virginia
Minnesota	Nevada	Oklahoma	W. Virginia
Mississippi	Nebraska	Texas	Wisconsin
			Wyoming

Various parts of Alaska.

Ten provinces of Canada, including:

Alberta	Quebec
Manitoba	Yukon Territory
Northwest Territory	Chipinyan
Ontario	British Columbia
Saskatchewan	Newfoundland

Four Mexican States or localities:

Matamorus	Campeche
Coahuila	Laguna Palos Prietos

Guatemala.

The usual conception of bird migration is a north and south movement. If this was strictly true it would be expected that the bulk of the wild fowl banded at Avery Island, Louisiana, would, on their journey to the northern nesting grounds, follow a rather narrow territory, and would cover about this same territory on their return from the North to their wintering grounds South. A study of the accompanying chart will show that bands taken from wild fowl banded at Avery Island, Louisiana have been returned from a territory covering the breadth of the land from the Atlantic to the Pacific Ocean, and from the Arctic to the Tropics; showing conclusively that Louisiana is the focal point to which a large part of the wild fowl of North America come in winter.

The greatest number of wild fowl banded in any one year was 6,126 in 1933, while 1932 was a close second with 6,091.

The greatest number banded in any one day was 1,514 on December 12, 1933, but I have banded in excess of five hundred on many days.

The value of wild fowl banding is:

First, to determine the length of life of the bird.

Second, to determine the territory covered by the different species in relation of the locality where banded.

Third, to determine the sex ratio.

The oldest return band was taken from a female Lesser Scaup (*Nyroca affinis*), banded December 29, 1922, and killed during the Fall of 1932, at Clearwater, Manitoba.



Other long lived birds were:

Louisiana Heron (*Hydranassa tricolor ruficollis*) No. 36191, banded May 2, 1921, was caught in trap February 11, 1931, at Point Aux Feu, Louisiana.

Ring-neck (*Nyroca collaris*) drake, banded February 15, 1922, was killed October 25, 1931, at Firma, Missouri.

Green-winged Teal (*Nettion carolinense*) drake, banded March 4, 1922, was killed February 2, 1930, at Coahuila, Mexico.

As migratory wild fowl banded in Louisiana must go north to nest, and then come south for the winter, it follows that for every year a Duck that I have banded lives, it has twice run the gauntlet of the gunners of the country from Canada to the Gulf—once up and once down. The Lesser Scaup that lived for ten years after being banded went through the barrage twenty times and I wonder how many times it had been shot at.

One of the most interesting things brought out by my banding operations, has been to learn how true migratory wild fowl are to their original migration routes. Since 1917, I have from time to time shipped Ducks taken and banded at Avery Island, Louisiana, by express to the Pacific Coast and to the Atlantic Coast, where they were liberated by operators of the United States Biological Survey, to determine whether or not these birds had the homing instinct such as is shown by the Carrier Pigeon. There are three great flyways which are used by wild fowl in their journeys to and from the breeding grounds of the North, and to and from the wintering grounds of the South. The greatest is through the central part of the country between the Alleghany Mountains and the Rocky Mountains and is known as the Mississippi Valley Migration Route. The next largest is along the Atlantic Coast from the breeding grounds of the North, east of the Allegheny Mountains, known as the Atlantic Coast Migration Route. The third is west of the Rocky Mountains along the Pacific Coast following the Pacific Ocean, and known as the Western or Pacific Coast Migration Route. Of the two hundred and seventy-six banded Ducks sent by express from Avery Island to Pacific Coast points and there liberated, forty-nine have been retaken. Forty of these returned to the Mississippi Valley Route, and nine were taken along the Pacific Coast. From the one hundred and sixty-four banded Ducks liberated on the Atlantic Coast, forty-one bands have been returned. Thirty-nine of these returns have been from the Mississippi Valley, and two from the Eastern Route; showing definitely that the great majority of the birds sent out of their home range return to the migration route from which they were taken.

One of the most unusual returns was, Pintail (*Dafile acuta tzitzihoo*) No. A658600, banded at Avery Island, February 14, 1930, and sent for liberation to the Biological Survey at Washington, D. C. This bird with many others was liberated on the Potomac River near Washington, and killed at Gustine, California, November 2, 1932, at a point on the Pacific Coast almost opposite the point on the Atlantic Coast where it was liberated.

In their natural state almost all birds are monogamous. It is, therefore, logical to assume that nature will produce an exact numerical quantity of the sexes in birds as it does in mammals. This supposition has been borne out by the careful investigation by competent observers of the sex ratio in Domestic Fowl, the results showing less than 2% difference in the sex ratio. An amazing fact brought out by my banding records is the great predominance of males over females in many species of wild fowl. This statement would have but little weight if it were based on the records of only a few trappings covering one or two years, but with a record of more than twenty years, covering hundreds of trappings, made from early fall to late spring each year, a record is built up that is indisputable.

During the past twenty years I have recorded the sex of each Duck banded, and a study of these records shows that the males are greatly in excess of the females in all species of Ducks that I have handled in sufficient numbers to build up a real record.

Of Lesser Scaups I have banded 6,159, and the males exceed the females $2\frac{1}{2}$ to one. Of Pintails I have banded 7,067, and the males exceed the females $1\frac{2}{3}$ to one. Of Ring-necks I have banded 913, and the males exceed the females $4\frac{1}{2}$ to one. Of Blue-winged Teal I have banded 992, and the males exceed the females $4\frac{1}{5}$ to one. Of Canvasbacks I have handled 461, and the males exceed the females $4\frac{1}{2}$ to one.

This excess of males over females is a real factor in the decline of our Duck population, in some species at least. First, because the unmated males will, undoubtedly, greatly harass the nesting females, often causing a breaking up of the nest. Second, because of the considerable excess of males, the breeding stock of our Ducks is much smaller than an observer would suppose, when seeing large flocks of these birds.

In order to give the reader an idea of the great distances covered by Ducks on their northern journey from Louisiana, the following records are given:

Lesser Scaup (*Nyroca affinis*) No. 35832, banded February 14, 1916, was killed at Ft. Smith, Northwest Territory, Canada, May 26, 1919. 2,875 miles from the place banded.

Mallard (*Anas platyrhynchos*) No. 36164, banded April 8, 1918, was killed at Johnston, Saskatchewan, Canada, October 13, 1918. 1,667 miles from the place banded.

Ring-neck (*Nyroca collaris*) No. 101407, banded February 17, 1922, was killed at Cross Lake, Saskatchewan, Canada, May 12, 1923. 2,242 miles from the place banded.

Blue-winged Teal (*Querquedula discors*) No. 504165, banded November 23, 1922, was killed at the east side of Lake Manitoba, Manitoba, Canada, September 16, 1923. 1,610 miles from the place banded.

Pintail (*Dafila a. tzitzihoo*) No. A666191, banded January 3, 1931, was caught in trap at Quithlook, Alaska, May 18, 1932. 3,565 miles from the place banded.

Coot (*Fulica americana*) No. A666392, banded January 26, 1931, was killed at Bay DeVerde District, Newfoundland, September 29, 1931. 2,357 miles from the place banded.

Pintail No. A666445, banded January 31, 1931, was caught at Dillingham, Alaska, in the Spring of 1931. 3,622 miles from the place banded.

Pintail No. A658851, banded February 18, 1931, was killed on Selawik River, Alaska, April 12, 1931. 3,507 miles from the place banded.

Lesser Scaup No. B632931, banded February 3, 1932, was killed in Northwest Territory, Canada, during the Fall of 1932. 2,817 miles from the place banded.

Green-winged Teal (*Nettion carolinense*) No. 504440, banded December 26, 1922, was killed in Alberta, Canada, September 1, 1923. 2,127 miles from the place banded.

Pintail No. A658863, banded February 18, 1931, was killed thirty miles North of Old Crow Village, Youkon Territory, Canada, September 3, 1932. 3,162 miles from the place banded.

It is an interesting fact that banded birds have no fear of the traps in which they were caught, and this is true of both the wild fowl and the smaller migratory birds; they return to the traps and are taken over and over again often during the same day, and return to the place where they were banded year after year. For instance:

Coot (*Fulica americana*) No. A658025, banded December 29, 1929, was retrapped in the same trap December 16, 1931, also January 19, 1934.

Coot No. A665698, banded November 15, 1930, was retrapped in the same trap December 20, 1932, January 25, 1933 and January 19, 1934.

Coot No. A629279, banded February 16, 1929, was retrapped in the same trap February 16, 1932 also January 31, 1934.

Pintail No. A666746, banded January 6, 1931, was retrapped in the same trap December 7, 1931, December 20, 1932, December 22, 1933 and January 31, 1934.

Coot No. A658126, banded December 20, 1929, was retrapped in the same trap November 5, 1930, February 16, 1932, December 20, 1932 and January 31, 1934.

Coot No. A666140, banded December 29, 1930, was retrapped in the same trap January 28, 1932, February 16, 1933 and January 31, 1934.

I operate for my banding of the migratory wild fowl two large permanent, wire-covered traps, measuring 50 x 50 feet, with a receiving cage 10 x 10 feet on each side, and connected with the main trap by a wire V. These traps are baited with three hundred pounds of rice each morning, from the time the Ducks arrive in the Fall until they leave in the Spring. The traps are set usually one day a week. After the first four or five bandings, banded Ducks taken in the traps greatly outnumber the unbanded ones. I frequently get Ducks that were banded in the morning back in the trap the same day, and by the first of February, the banded birds so greatly outnumber the unbanded, at each setting of the traps, that it is no longer of any use trying to band; for sometimes I will have to handle more than two thousand banded Ducks to get one hundred unbanded ones, and the banded birds knowing that the grain is spread at a certain time, go into the trap as soon as the man who spreads the grain leaves, and eat it all up before the other birds get a chance to feed.

For small birds I have a series of small traps set at widely scattered points, often two miles or more from the station where the actual banding is done. These small traps, when set, are tended by men who make the round of them all, several times a day, bringing the birds taken in the traps in transfer cages to the station where the actual banding and recording is done. It is not unusual for small birds such as Sparrows, Cowbirds, Red-winged Blackbirds and Grackles to be retaken from the same trap in which they were caught in the morning, several times during the same day, although the trap may be as much as two miles from the point to

which the bird was brought for the putting on of the band. This proves that birds have a keen and immediate sense of location, and return at will, when liberated, to the spot from which they may have been forcibly taken.

I have found trapping Ducks and other migratory game birds and the smaller non-game birds, for banding purposes, comparatively easy, but when I was requested by the Biological Survey to band Blue Geese (*Chen caerulescens*), I found I was up against a hard task. The Biological Survey had previously sent two expeditions to Louisiana for the purpose of banding Blue Geese, but not a single Goose was captured. First, I tried baiting with grain, areas where the Blue Geese came regularly, but without success, as they would not eat the grain, preferring the natural food of which there is an unlimited supply in the marshes along the coast of Iberia and Vermilion Parishes. Then, I tried using live Blue Goose decoys to see if the Geese would come to them, and found the wild birds came to them readily. I then built in the centre of one of their principal feeding grounds on my land at Cheniere au Tigre, on the coast of Vermilion Parish, a pear-shaped poultry wire fence three hundred feet across, tapering at the smaller end to a wire-covered pen fifty feet square, the front of which faced and connected with the small end of the large inclosure. Into the large inclosure I put about sixty wing-tipped Blue Geese, and had them trained to drive easily into the covered pen. My expectation was, that from the hundreds of thousands of Blue Geese that would feed near and fly over this inclosure, a good many would alight with the decoy Geese and follow them into the covered pen, where they could be caught and banded.

I built a small camp near the pen and stationed there two men who had been trained for years in assisting me in my work of banding wild fowl. These men faithfully tended this pen for sixty days, but only captured one hundred and seven Blue Geese and seven Lesser Snow Geese (*Chen h. hyperboreus*). Many of Geese entered the pen with the decoys and followed them as they were slowly driven towards the covered pen, but only an occasional wing-free Goose would go inside. They almost always stopped as soon as they saw the wire over head, and flew away. So this attempt was without much success.

During the late summer of 1933, I covered the bottom of a small shallow pond in the center of the Blue Goose feeding territory with fine gravel, knowing that once Geese found a spot where gravel could be gotten they would go to it regularly. After the Geese began coming regularly to the graveled pond, having procured a lot of very small steel traps to which light weights were attached, I had my chief warden, Lionel LeBlanc, build a blind of the native grass on the edge of the pond, and after setting a number of the traps, he would get into the blind to await results. In this way he caught in a few days one hundred and fifty-two Blue Geese and nine Lesser Snow Geese; all of which were banded and liberated at once. From this entire lot only one was injured, as the traps were so small that the Geese were caught by the toes only, and as they were only in the traps a few minutes, the toes were not even bruised severely. This is by far the easiest way to capture Blue Geese for banding purpose.

A few Blue Geese come in with my decoys at Avery Island each year, and these become so tame that the man in charge often catches them with his hands, while feeding the other Geese. For, after they learn to eat grain, they will come to his feet if he spreads grain around him, and he only has to make a quick grab to catch them.

The 1933 crop of Blue and Lesser Snow Geese was exceptionally heavy, and there were more young birds showing in the flocks, than I have seen for many years.

When the Geese first arrived in early November 1933, not much of the three-cornered grass—on the roots of which they feed—had been burned, and as the grass was unusually high and thick, the birds often mashed down small areas and would then tunnel in under the standing grass to feed on the roots. Two of my men, Aras Guidry and Lionel LeBlanc, found that by walking as closely as possible to these feeding Geese and then running at them, they could catch some of them with their hands before they could take wing, and in this manner they caught quite a number, but as it seemed to frighten the Geese, I had this method stopped.

The percentage of bands returned by sportsmen in relation to the number of Ducks banded is an indication of the percentage of the wild fowl population actually killed by the hunters of the

country. I think, fully 50% of the banded birds shot are reported to the Biological Survey. If this be true, from my banding of 21,996 wild fowl, there have been returns of 2,116 or 10%. This indicates that not more than 20% of the wild fowl supply is killed by hunters. If there is a larger reduction annually of the wild fowl supply, it must be from other causes than shooting.

The great concentration of wild fowl in the lowlands of Louisiana in winter makes it imperative that the Federal Government establish additional feeding and resting grounds in this state, where the birds will not be disturbed.

Avery Island, Louisiana.

SPECIMENS OF THE PHILIPPINE MONKEY-EATING
EAGLE (*PITHECOPHAGA JEFFERYI*).

BY M. E. MCLELLAN DAVIDSON.

THROUGH a transfer of natural history specimens from the Memorial Museum, Golden Gate Park, San Francisco, California, to the Museum of the California Academy of Sciences, the latter institution has come into possession of a fine example of the rare Philippine Monkey-eating Eagle (*Pithecophaga jefferyi*). This specimen (now C. A. S. No. 34592) was taken by Judge Borromeo at Mainit Lake, Surigao, Mindanao, P. I., in November, 1921. The captor presented the bird to Major A. L. P. Johnson, who, in his turn, gave it to the Memorial Museum. The bird is an adult in rather worn plumage.

This specimen yields the following measurements (in millimeters):

Bill:

Chord of culmen from cere	69.0
Chord of culmen including cere	80.0
Depth at base	51.0
Width at base	17.5
Wing	608.0
Tail	432.0
Tarsus	135.0
Middle toe with claw	97.5
Inner toe with claw	94.0
Outer toe with claw	72.0
Hind toe with claw	81.0
Longest occipital feather	97.0

The wing formula is: 1 < 2 < 3 < 4 < 5 > 6

Pithecophaga jefferyi was originally described by Ogilvie-Grant from a specimen obtained for John Whitehead on the island of Samar, Philippine Islands. Since the appearance of this description, the existence of twelve museum representatives of the Monkey-eating Eagle has been recorded in scientific journals. The locations of these specimens are:

British Museum (Natural History), London, England.

1. *Type*. Male; Samar, Philippine Islands; sometime between May and July 25, 1896; collected for John Whitehead. Study skin.

2. Female; captured in Sandag, Sarigas, Mindanao, P. I.; early in 1909, died in London Zoological Gardens on February 11, 1910; collected for Father Llanos. Mounted.

U. S. National Museum, Washington, D. C.

3. Male; near Davao, Mindanao, P. I., September 3, 1904; collected by Fletcher L. Keller. Study skin (No. 192,382).

Public Library, Minneapolis, Minnesota.

4. In Menage Collection. Mounted.

Philippine Bureau of Science, Manila, Philippine Islands.

5. Male; Albay Province, Luzon, P. I.; exchange (? from museum of the Jesuit Fathers, Manila). Mounted.

6. Agus River, Rizal, Luzon, P. I.; May 11, 1907; collected by H. M. Ickis. Head, wing, and foot.

7. Female; Mount Ballong, near Imugan, Nueva Vizcaya Province, Luzon, P. I.; January, 1917; collected for Gov. E. A. Eckmann and Gov. Leo J. Grove; died in Manila Botanic Garden in March, 1918. Study skin (No. 7748) and skeleton.

8. Died in Manila Botanic Garden in November, 1918. Study skin.

University of Santo Tomas, Manila, P. I.

9. Mindanao, P. I. Mounted.

10. Samar, P. I. Mounted.

Museum of the Jesuit Fathers, Manila, P. I.

11. Mounted.

Norwich Museum, Norwich, England.

12. Mounted.

Museum of the California Academy of Sciences, San Francisco, California.

13. Mainit Lake, Surigao, Mindanao, P. I.; November, 1921; collected by Judge Borromeo. Study skin (No. 34592).

In addition to these specimens, several others have been recorded.

1. Kolambugan, Mindanao, P. I.; died in Manila, P. I., in January, 1920; collected by Pedro Pulgado. Mounted.

2. Live individual from Southern Islands, Philippine Is., exhibited at Philippine Carnival, Manila, P. I., in 1920. Destroyed by fire.

3. In 1920 a mounted example was exhibited in a store on the Escolta, Manila, P. I.

4. Mount Maquiling, P. I.; September 22, 1920; taken by Pedro Gibas. A claw and the tail preserved.
5. Camp Keithley, Lake Lanao, Mindanao, P. I.; ?1906; captured by Moros. Study skin.
6. Male; Camp Keithley, Lake Lanao, Mindanao, P. I.; September 27, 1906; collector for Joseph Clemens. Study skin.
7. Purchased in Manila by M. Hachisuka. Taken in Davao, Mindanao, P. I.
8. Catalnan, ten kilometres west of Davao, Mindanao, P. I.; about March, 1928; taken by Mr. Kojima. Mounted.
9. Three mounted specimens in the Japanese Hotel in Davao, Mindanao, P. I. (On the authority of Mr. Wallace Adams, Chief Fish and Game Administration, Manila, Philippine Islands).
10. 1 mounted specimen in the possession of Mr. Kojima, Davao, Mindanao, P. I. (On the authority of Mr. Adams).

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SOME ADDITIONAL AUDUBON COPPER-PLATES.

BY PHOEBE KNAPPEN.

I DID not appreciate the interest attaching to copper plates for the double elephant folio edition of Audubon's 'Birds of America' until I read Dr. May's note in a recent issue of 'The Auk' (11).¹ Inquiries were immediately made concerning two plates which had been seen and casually admired in the fall of 1928. They are deposited in the library of the Museum Building of the New York Botanical Garden, Bronx Park, New York City.

These plates were presented to the Botanical Garden by the former director, Dr. N. L. Britton, to whom they were given by John J. Croke (4) of Staten Island, at some time previous to his death in 1911. Mr. Croke was, presumably, a friend of the senior partner of Phelps, Dodge and Company [Ansonia Brass and Copper Company], who one day advised him to inspect a recent purchase of scrap copper, as there were figures of birds engraved on it. This Croke proceeded to do, and finding the scrap to consist of plates for the 'Birds of America,' he bought as many as he could carry away under his arm.

One of these plates is number LXIV, of the Swamp Sparrow, *Fringilla Palustris*, representing a male clinging to the stem of a May-apple. On this plate the usual—'Drawn from Nature by J. J. Audubon, F.R.S., F.L.S.'—is replaced by 'Drawn from Nature by Lucy Audubon.' According to Mr. Ruthven Deane, Audubon chose this as a way of paying a delicate compliment to his wife.² On the original painting from which the plate was made, now owned by the New York Historical Society, is this note in Audubon's writing: "Mr. Havell will please have Lucy Audubon [sic] name on this plate instead of mine."

The other plate is number CXCIV, of the Hudson Bay Titmouse, *Parus hudsonicus*, illustrating a male, female and young. In six sets of the 'Birds of America' consulted, the legend on this plate is Canadian Titmouse but in two others³ it appears as Hudson Bay

¹ Italic figures in parentheses refer to bibliography.

² (10), v. 2, p. 306.

³ One being the perfect copy selected by Robert Havell for himself, now at Trinity College, Hartford, Connecticut. (5), p. 408 and (10), v. 2, pp. 203-204.

Titmouse. There is no evidence that the name on the plate has been altered, as it must have been at some time, unless there were engraved two plates of this same subject.¹ The mount of the drawing preserved in the New York Historical Society has the following notation upon it: "Hudson's Bay Titmouse No. 194." This is the form used throughout the various texts as the proper name of the species also referred to as Canada Titmouse.

Six of the original copper-plates for the 'Birds of America' were recorded as being deposited in the Smithsonian Institution in Washington, D. C. (5). It seemed advisable to study these preparatory to making a trip to New York to see again the plates described above. Surprise soon yielded to delight when I found that the only Audubon copper-plate on public display in the Smithsonian was not one of those mentioned by Deane. This is Plate CCLIX, of the Horned Grebe, *Podiceps cornutus*, a medium sized plate portraying the male and female. There is nothing in the records of the Institution to indicate when or by whom this plate was donated, save that it was in the collection prior to March 5, 1888. On the back of the plate the initials H. F. S. are cut, the H. and F. being very clearly engraved with double lines, the S. faintly scratched on. Who H. F. S. was, the writer is unable to say.

The six plates presented to the Institution by William E. Dodge in 1885, were then located and examined, with the result that the plate of the Great Blue Heron—CCXI, was found to be missing, but in its stead was a plate of the Hooping [sic] Crane, young, No. CCLXI. Reference to the Smithsonian Institution Accession Catalogue for 1885 disclosed that though no plate of the Great Blue Heron had been listed, the one of the Hooping Crane was catalogued among those received from W. E. Dodge in May, 1885. The error here may be attributed to the loss of an 'L' from the plate number CCLXI (i. e.: CCXI) in transcribing the record for Mr. Deane. These plates were correctly noted by B. A. Bean in 1896, though he stated erroneously that the donor was a Mr. Stuart of New York. (3).

Correspondence with Dr. N. L. Britton and Mr. W. T. Davis uncovered the information that the rest of the Crooke plates had been offered for sale at an auction of his estate conducted on Staten

¹ (10), v. 1, p. 384.

Island in 1911. Four of the plates were sold to Mr. J. B. H. Greaves who recalls that he selected them from a larger number—five or possibly six plates. The remaining plate or plates were acquired as a memento by another friend of Crooke's. I have so far been unable to ascertain who this man was, and which plates he purchased.

Mr. and Mrs. Greaves kindly permitted me to examine their four, medium-sized plates, three of which are in fine condition, the fourth being somewhat corroded: CXLIV, Small Green Crested Flycatcher, *Muscicapa acadica*; CL, Red-eyed Vireo, *Vireo olivaceus* (this lettering is nearly effaced); CXC, Yellow-bellied Woodpecker, *Picus varius*; CCCLVIII, Pine Grosbeak, *Pyrrhula enucleator*.

All the plates examined bear in two places upon the reverse the stamp of the copper-plate maker, the initial of the given name being somewhat indistinct:

A. HIAM
9 Ratcliff Row
Bath St. City Rd.

One or two of the plates also bear the stamped word, London. Used in conjunction with correct inscriptions and dates on the face of the plate this imprint serves as a mode of authenticating the plates.

Two slight errors in Mr. Deane's article (5), due to his having published the figures and names as sent to him by the owners, are here amended with his permission. On page 404 the plate of the Canada Goose listed as CCLI should be CCI. On the next page reference is made to the Cowpen Bird as Plate CCII, when it should be XCIX, the former number referring to the figure of the American Gull.

Some of the plates recorded by Deane (5) have changed hands (9, 12), so it was decided to write to all the owners and institutions listed by him and find out whether they still possessed the plates and if not, who the present owners were. As will be seen from the appended list a number of the plates are missing, but as another was discovered and the names of four other plates were secured during the course of the correspondence, the score is about even.

Number CCCXV engraved with two figures each, of the Brown

COMPREHENSIVE LIST OF AUDUBON COPPER-PLATES KNOWN OF, OR MENTIONED IN LITERATURE.
 * = MISSING AT TIME OF WRITING; d = DECEASED; NUMBERS REFER TO BIBLIOGRAPHY.

Part	Plate	Name	Owner or Institution
1	I	Great American Cock	Mr. Cleveland E. Dodge, N. Y. C. (5)
2	VI	Great American Hen and Young	Am. Mus. Nat. Hist., N. Y. C. (5)
3	XII	Baltimore Oriole	d. Mayor Latrobe, Baltimore, Md. (12)
5	XXI	Mocking Bird	Groton School, Groton, Mass. (12)
5	XXII	Purple Martin	Mr. Charles F. Bliss, New Haven, Conn.
8	XXXVII	Gold-winged Woodpecker	Mrs. Shelton E. Martin, Peapack, N. J. (12)
*10	XLVII	Ruby-throated Hummingbird	d. John H. Sage, Portland, Conn. (5, 14)
11	LII	Chuck-will's Widow	Smithsonian Institution, D. C. (3, 5)
12	LVI	Red-shouldered Hawk	Princeton University, Princeton, N. J. (5)
13	LXIV	Swamp Sparrow	New York Botanical Garden, N. Y. C.
15	LXXII	Swallow-tailed Hawk	Pratt Memorial Library, Cohasset, Mass. (8)
16	LXXVI	Virginian Partridge	Smithsonian Institution, D. C. (3, 5)
17	LXXXII	Whip-poor-will	Mr. Charles F. Bliss, New Haven, Conn.
*20	XCIX	Cow Bunting or Cow-pen Bird	d. Miss Grace H. Dodge, N. Y. C. (5)
21	CI	Raven	Princeton University, Princeton, N. J. (5)
22	CVI	Black Vulture or Carrion Crow	Mr. Charles A. Cowles, Ansonia, Conn. (5)
*23	CXII	Downy Woodpecker	d. Miss Grace H. Dodge, N. Y. C. (6)
*23	CXIII	Blue-bird	d. Miss Grace H. Dodge, N. Y. C. (5)
*25	CXXI	Snowy Owl	Am. Mus. Nat. Hist., N. Y. C. (5)
27	CXXXI	American Robin	Smithsonian Institution, D. C. (3, 5)
29	CXLIV	Small Green Crested Flycatcher	Mr. J. B. H. Greaves, Staten Island, N. Y.
30	CL	Red-eyed Vireo	Mr. J. B. H. Greaves, Staten Island, N. Y.
34	CLXVII	Key West Pigeon	Mrs. Shelton E. Martin, Peapack, N. J. (12)
38	CXC	Yellow-bellied Woodpecker	Mr. J. B. H. Greaves, Staten Island, N. Y.
39	CXCIV	Canadian or Hudson's Bay Titmouse	New York Botanical Garden, N. Y. C.
40	CXCVI	Labrador Falcon	Mr. Charles A. Cowles, Ansonia, Conn. (5)
41	CCI	Canada Goose	Am. Mus. Nat. Hist., N. Y. C. (5)
*43	CCXI	Great Blue Heron	Smithsonian—mistaken identity. (5)
45	CCXXI	Mallard Duck	Am. Mus. Nat. Hist., N. Y. C. (5)
46	CCXXVI	Whooping Crane	Smithsonian Institution, D. C. (3, 5)
48	CCXXXVI	Night Heron or Qua Bird	Mrs. Cleveland H. Dodge, N. Y. C. (5)

Part	Plate	Name	Owner or Institution
*51	CCLIII	Pomarine Jager	d. C. H. Dodge, N. Y. C. (5)
*52	CCLVII	Double-crested Cormorant	d. D. Stuart Dodge, Simsbury, Conn. (5)
52	CCLIX	Horned Grebe	Smithsonian Institution, D. C.
53	CCLXI	Hooping Crane—Young	Smithsonian Institution, D. C. (3)
*54	CCLXVII	Arctic Jager	d. John H. Sage, Portland, Conn. (5, 14)
55	CCLXXI	Frigate Pelican	Carnegie Library, Pittsburgh, Pa. (7)
56	CCLXXVII	Hutchin's Barnacle Goose	Am. Mus. Nat. Hist., N. Y. C. (5)
57	CCLXXXI	Great White Heron	Am. Mus. Nat. Hist., N. Y. C. (1, 5, 9)
59	CCXCI	Herring Gull	Mr. Charles A. Cowles, Ansonia, Conn. (5)
62	CCCVI	Great Northern Diver or Loon	Am. Mus. Nat. Hist., N. Y. C. (5)
62	CCCLX	Great Tern	Wesleyan University, Middletown, Conn. (5)
65	CCCLXXII	Red-head Duck	Mr. Chester F. Tolles, Ansonia, Conn.
65	CCCLXXIII	Black Skimmer or Shearwater	Mr. Charles A. Cowles, Ansonia, Conn.
68	CCCLXXXVIII	Bimaculated Duck	Miss Norline W. Brainerd, N. Y. C. (6)
72	CCCLVI	Marsh Hawk	Mr. Charles A. Cowles, Ansonia, Conn. (5)
72	CCCLVIII	Pine Grosbeak	Mr. J. B. H. Greaves, Staten Island, N. Y.
73	CCCLXII	Yellow-billed Magpie, Steller's Jay, Ultramarine Jay, Clarke's Crow	Miss Mary Parsons, Lenox, Mass. (11)
76	CCCLXXXVIII	Hawk Owl	Am. Mus. Nat. Hist., N. Y. C. (5)
77	CCCLXXXI	Snow Goose	Am. Mus. Nat. Hist., N. Y. C. (1, 5, 9)
79	CCCLXCI	Brant Goose	Pleasant Valley Bird and Wild Flower Sanctuary, Lenox, Mass. (5, 12)
79	CCCXCII	Louisiana Hawk	Am. Mus. Nat. Hist., N. Y. C. (1, 5)
80	CCCXCVII	Scarlet Ibis	Smithsonian Institution, D. C. (3, 5)
82	CCCXVII	Dusky Albatros	Am. Mus. Nat. Hist., N. Y. C. (5)
82	CCCXVIII	American Scoter Duck	Mr. Charles A. Cowles, Ansonia, Conn. (5)
82	CCCIX	Havell's and Trudeau's Terns	Wesleyan University, Middletown, Conn. (5)
83	CCCXV	Brown Creeper and Californian Nuthatch	Wadsworth Athenaeum and Morgan Memorial, Hartford, Conn.
84	CCCXVII	Maris's, Three-toed, Phillips', Canadian, Harris's and Audubon's Woodpeckers	Princeton University, Princeton, N. J. (5)
85	CCCXXII	Rough-legged Falcon	Princeton University, Princeton, N. J. (5)

Creepers, *Certhia familiaris*, and the Californian Nuthatch, *Sitta pygmaea*, has been loaned to the Wadsworth Atheneum and Morgan Memorial by Mrs. Allen B. Talcott of New York. This is said to have been "found by W. E. Dodge about 1860 with six others and given by Mr. Dodge to Dr. C. R. Agnew of New York."

In addition to the five plates listed as belonging to Mr. Charles A. Cowles (5), he owns number CCCXXIII of the Black Skimmer or Shearwater; numbers XXII and LXXXII of the Purple Martin and Whip-poor-Will respectively are in the possession of Mr. Charles F. Bliss, while Mr. Chester F. Tolles has plate number CCCXXII of the Red-head Duck. These four plates were mentioned but not identified in Cowles' letter to Deane (5, p. 403) and were not included in his total.

Fifty-nine plates are recorded herein, of which one has never been found (CCXI), and nine have been lost since rediscovery. Thirty of the remaining forty-nine plates are deposited in public institutions and nineteen are privately owned.

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2. REIGNOLD.

Audubon Plates Sold for Junk. Letter to Editor: Forest and Stream 47(11): 203, September 12, 1896. [Had seen six of the plates including one of the bald eagle, about 1870.]

3. BEAN, BARTON A.

Audubon Copper Plates in the Smithsonian. Natural History: Forest and Stream 47(17): 325, October 24, 1896. [Correctly lists six of the plates in the U. S. N. M.]

4. DAVIS, W. T.

John J. Crooke: A Staten Island Naturalist. Staten Island Assoc. of Arts and Sciences, Proc. 3(4): 169-172, March-May, 1911. [Obituary notice, containing information on the finding of the copper-plates by Crooke to whom they were sold by Mr. Anson H. Phelps of the Ansonia Copper Company.]

5. DEANE, RUTHVEN.
The Copper-Plates of the Folio Edition of Audubon's 'Birds of America,' with a Brief Sketch of the Engravers. *Auk* 25(4): 401-413, October, 1908. [This is the most complete record of the recovery and present repositories of the plates. Actual status—38.]
6. DEANE, RUTHVEN.
Two additional Copper-plates of the Folio Edition of Audubon's 'Birds of America.' *Auk* 27(1): 93, January, 1910. [Status—40.]
7. DEANE, RUTHVEN.
One additional Copper-plate of the Folio Edition of Audubon's 'Birds of America.' *Auk* 42(2): 282, April, 1925. [Status—41.]
8. DEANE, RUTHVEN.
One additional Copper-plate of the Folio edition of Audubon's 'Birds of America.' *Auk* 42(3): 452, July, 1925. [Status—42.]
9. DEANE, RUTHVEN.
The Copper-plates of the Folio Edition of Audubon's 'Birds of America.' *Auk* 44(1): 121-122, January, 1927. [Recording presentation of M. R. Audubon's two plates to Am. Mus. Nat. Hist.]
10. HERRICK, FRANCIS HOBART.
Audubon the Naturalist. v. 1, p. 384; v. 2, pp. 193-194, 203-204, 306-309. D. Appleton and Co., N. Y., 1917.
11. MAY, JOHN B.
Another Audubon Copper-plate located. *Auk* 47(4): 580, October, 1930. [Actual status—43 plates.]
12. MAY, JOHN B.
More Audubon Copper-plates. *Auk* 48(2): 284, April, 1931. [Records the discovery of three more plates and notes another which can not be located, though known to exist, and mentions the transfer of a fifth plate noted by Deane, 1907, to a museum. Actual status 46 (+ 1 unlocated)].
13. MUSCHAMP, EDWARD A.
Audacious Audubon, the Story of a Great Pioneer, Artist, Naturalist and Man. pp. 282-283, 284, 286, Brentano's, N. Y., 1929.
14. SAGE, JOHN H.
The Plates of Audubon's Work. *Natural History: Forest and Stream* 47(13): 244, September 26, 1896. [Two plates owned by him.]
15. WILLIAMS, GEORGE A.
Robert Havell, Junior, Engraver of Audubon's 'The Birds of America.' *Print-Collectors Quarterly*, v. 6, pp. 225-257, illus., Boston, 1916.

I wish to express my gratitude to the many people who have so graciously replied to my numerous questions and letters, in the course of gathering the material reported upon here.

Biological Survey, Washington, D. C.

THE BIRDS OF ANTIGUA.

BY STUART T. DANFORTH.

ANTIGUA is one of the more northerly of the chain of West Indian islands known as the Lesser Antilles, and is the seat of government of Britain's Leeward Islands colony. It is situated in latitude $17^{\circ} 6' N.$ and longitude $61^{\circ} 45' W.$ The island is roughly pentagonal in shape, with numerous deep indentations in the shoreline, which reaches about 70 miles in length. The greatest distance across the island from east to west is 12 miles and from north to south $9\frac{1}{2}$ miles; the area is 108 square miles, equal to approximately 69,275 acres.

Geologically, the island falls into three well-marked sections: (1) the northern and eastern, of coral-limestone formation, consisting of gently undulating country rising to not more than 456 feet elevation in the Pope's Head Hills; (2) the southwestern, of volcanic origin, which is decidedly mountainous, with numerous peaks rising above 1,000 feet in elevation (the highest being Boggy Peak, 1330 feet), and rugged ridges separated by innumerable little valleys of great fertility; and (3) the central plain, running diagonally across the island from northwest to southeast, separating the limestone from the volcanic districts, and seldom rising above 60 feet except on isolated hills.

A century or so ago almost every cultivable acre in Antigua was under sugar-cane, but to-day not more than about 9,000 acres are devoted to this crop, with the result that abandoned sugar estates occur throughout the territory from sea-level to near the tops of some of the highest hills. There is, however, a considerable area of peasants' small holdings, especially in the alluvial valleys to leeward, but they may also be seen on the steep hillsides throughout the Southwest.

The first impression the naturalist receives on landing at St. John's is rather one of disappointment. Antigua appears like a flat, dry, monotonous country without even the attractions of an interesting xerophytic type of vegetation. These first impressions soon change as he travels away from the city into the interior, and he finds himself most agreeably surprised in the really great variety

of types of country to be found. The rainfall in the north and east is relatively scanty, the annual average being around 35 inches, so that there are large areas of xerophytic vegetation, some of them wooded and of very interesting types, such as the magnificent stand of whitewoods known as Collins' Woods near the eastern extremity of the island. Throughout this area, which is very largely under sugar-cane cultivation, are scattered numerous wooded knolls rising above the surrounding canefields, and there are also considerable areas of low dry brush and scrub, especially near the coast, as well as of poorly-kept pastures partially overgrown with "cossie" (*Acacia arabica* and *A. farnesiana*). The xerophytic type of country culminates in a type of landscape showing agaves and cacti dominating. The xerophytic zone is not confined to the limestone region, and runs in a belt along the southwest coastline, but in the heart of the volcanic region, over an area of several square miles, and where there is a rainfall which must be close upon 55 to 60 inches annually, the vegetation is definitely mesophytic, though without the palms and tree-ferns characteristic of the more mountainous Caribbean islands. The mesophytic area of Antigua reaches its climax in a type resembling rain-forest, with a floor very largely of ferns, remnants of which are to be found on Sugar Loaf Mountain (1058 feet) and in a few other restricted localities. The disastrous effects of continual deforestation are particularly noticeable in the mesophytic area, and little serious attempt seems to be made to conserve the few acres of real forest remaining (that on Sugar Loaf being a notable exception).

There is only one permanent river (Bendal's Stream), and that is reputed to dry up in times of severe drought. In the rainy seasons several ill-defined watercourses which have their origin in the central plain or in the eastern part of the hilly region meander across the island to drain into eastern bays. The largest stretches of fresh water are the two reservoirs maintained by the Antigua Sugar Factory near Gunthorpe's on the northern edge of the central plain, and the Government reservoirs at Wallings and Body Ponds in the heart of the volcanic district, each of which covers several acres. Scattered around the more level parts of the island are astounding numbers of small fresh water ponds, few of them exceeding an acre in extent; it is probable that there are more than

two hundred of them, and many, despite their limited size, harbor numerous aquatic birds.

The coast is for the most part either rocky headland, sandy beach backed by the usual dune vegetation, or mangrove swamp and mudflats; there are hundreds of acres of shallow salt- or brackish-water lagoons, and shallow inlets of the sea, known locally as "flashes," where large numbers of shorebirds are to be found.

Off the coast of Antigua, especially in the northeast, there are numerous outlying islets of coral origin, where that scourge of the West Indies, the mongoose, has not been introduced. With the exception of Guana Island, which is separated from the mainland by a channel so narrow that the mongoose has been able to cross, the largest of these is Long Island, of 138 acres; it is very flat and supports a xerophytic scrub; there are few trees and the bush is of a rather open nature. Long Island has two mangrove-bordered lagoons and a small artificial pond. The birds are essentially the same as those of the mainland. Nearby, to the south, is tiny Maid Island, of about 7 acres. Great Bird Island is barely 20 acres in extent, but is of much ornithological interest due to the vast numbers of seabirds which nest on its 110-foot limestone cliffs. Many seabirds also nest on Hell Gate Island, a diminutive rocky islet close to Great Bird Island. In the general vicinity there are a number of other islets, some being hardly more than the tops of submerged reefs with no vegetation other than seaside purslane (*Sesuvium portulacastrum*), but they do not appear to be of special interest from the ornithological point of view. Off the leeward coast there are many small islets composed of rocks of volcanic origin, but none of these were visited.

Antigua has been somewhat neglected by ornithologists, some of whom were doubtless discouraged by the somewhat unpleasant first impressions which many naturalists casually visiting the island receive. The first collections of birds on Antigua were made by F. A. Ober for the Smithsonian Institution in August and September, 1877. George N. Lawrence reported on this collection in the Proceedings of the U. S. National Museum, I, 1878, pp. 232-242. He lists 42 species from Antigua, but by no means all of these were collected, and five were doubtfully recorded, some on hearsay evidence only. Ober also made collections on Barbuda.

In the early summer of 1890 Cyrus S. Winch, collecting for Cory, visited Antigua, and collected 32 species. A list of these was published by Cory in 'The Auk' for 1891, pp. 46-47. Nine of the species had not been listed by Lawrence.

The next collector to visit the island was H. G. Selwyn Branch, who spent the late summer, fall, and early winter of 1903 collecting on Antigua and Barbuda. On Antigua he collected 166 specimens representing 37 species. These were later obtained by the U. S. National Museum, and reported upon by J. H. Riley (Smithsonian Miscellaneous Collections, Quarterly Issue, II, 1905, pp. 277-291). Branch's work brought the total number of species known from Antigua to 59.

In the latter part of December 1929 and early January 1930, James Bond, of the Academy of Natural Sciences of Philadelphia, spent a few days in Antigua and Barbuda, but collected very few birds in Antigua, and has published no report upon them.

Mention should also be made of Dr. J. G. Myers, Entomologist of the Colonial Development Fund, who has made some interesting observations on the birds of Antigua and Long Island, although he has made no collections. He published a few notes of an economic nature in 'A Preliminary Report on an Investigation of West Indian Insect Pests' (London, Empire Marketing Board, No. 42, July, 1931).

The present writer, accompanied by an assistant, Virgilio Biaggi, Jr., spent the period from July 26 to August 17, 1933 (except for three days spent on Barbuda) studying and collecting birds in Antigua. During this time he made observations on 61 species of birds, of which 42 were actually collected, and as a result of this work 20 species previously unrecorded from the island have been added to its known avifauna. This brought the total list of birds positively known from Antigua to 79. Two additional species forwarded by Mr. Box from Antigua since then have increased this list to 81, exclusive of six which have been doubtfully recorded, and which are listed hypothetically.

The writer is greatly indebted to many persons who gave him assistance in many ways during his stay in Antigua, and since then. Words cannot express his gratitude to Mr. Harold E. Box, Entomologist attached to the local government. The fact is that what-

ever success the little expedition has achieved is in large measure due to the whole-hearted and unselfish interest which Mr. Box took in its work. His assistance took such diverse forms that it is impossible to recount them. He gave up much of his time to take us around the island to favourable collecting localities, well known to him, representing all types of country. His profound knowledge of the island and of its natural history was placed completely at our service, preventing much loss of time, and he came to our assistance in many other ways. His generous interest in the work has continued long after our departure from the island, and up to the time of writing this account the writer is continuing to receive much valuable assistance of many kinds from him. The part of this paper descriptive of Antigua is in part his work.

The writer also owes a special debt of gratitude to Major Hugh Hole of Nottingham, England, and to his representative in Antigua, Mr. Marion Moore, for permission and facilities for visiting Great Bird Island and Hell Gate Island; and to the Hon. L. I. Henzell, of Antigua, for similar courtesies in respect to Long Island. Special mention must also be made of the interest in the work and assistance given to it by His Excellency Sir Reginald St.-Johnston, K.C.M.G., Governor of the Leeward Islands, and of Commander D. J. D. Noble, R.N., one of the results of which was the official publication of a preliminary report on the birds of Antigua (Supplement to the Leeward Islands Gazette of Nov. 16, 1933). Mr. W. G. Heath of Parham, Antigua, has kindly sent me some notes on the birds of Antigua, use of which has been made in writing this paper.

An annotated list of the birds known from Antigua follows. The specimens collected by the writer are in his private collection, which is at present deposited at the College of Agriculture and Mechanic Arts of the University of Puerto Rico.

Podilymbus podiceps antillarum Bangs. ANTILLEAN GREBE. "Diver." Fairly common resident. A nest with eggs was found at Gunthorpe No. 2 Pond on August 3. The stomach of a three-quarters grown young, unable to fly, collected at Body Ponds on August 5, contained a crayfish and a Naucorid bug, *Pelocoris femoratus*. An adult male taken at Dead Sands Bay the following day had eaten 2 damselfly naiads; 2 dipterous larvae; 2 *Pelocoris femoratus*; 4 Hydrophilid beetles, *Tropisternus lateralis*, and some unidentified insect material. The measurements of

this specimen are: Exposed culmen 24.8; wing 126.5, and tarsus 40.0 millimeters.

Phaethon aethereus mesonauta Peters. RED-BILLED TROPIC BIRD. Three individuals observed at Great Bird Island on August 3. Mr. Box tells me that in May he saw large numbers breeding on the cliffs. Not previously recorded from Antigua.

Pelecanus occidentalis occidentalis Linnaeus. BROWN PELICAN. "Booby." A few occur regularly around the coast, but not known to breed in Antigua. Observed at Fort James, Long Bay, Old Road, Indian Creek, Rabbit Island, Hell Gate Island, and Long Island.

[**Pelecanus erythrorhynchos** Gmelin. WHITE PELICAN. Clark (Proc. Bost. Soc. Nat. Hist., 32, 1905, p. 233) states that J. H. Fleming tells him he has seen White Pelicans in the harbor of St. John's. On account of the fact that the only unquestionable record of this species for the West Indies is that of a specimen taken in Cuba, I am listing it hypothetically.]

Fregata magnificens rothschildi Mathews. MAN-O-WAR BIRD. "Scissor-tail." Common resident around the coast, but not known to breed in Antigua. Noted at numerous points on the coast, also at the Gunthorpe Reservoirs, Rabbit Island, Great Bird Island, and Long Island.

[**Ardea herodias adoxa** Oberholser. WEST INDIAN GREAT BLUE HERON. Ober reported that this species was said to arrive in the fall. There is no definite Antiguan record.]

Casmerodius albus egretta (Gmelin). AMERICAN EGRET. "White Crane." A flock of three was observed closely at Goat Head Lagoon on August 1, and constitutes the first record for the island.

Egretta thula thula (Molina). SNOWY EGRET. Rather uncommon. A male with nuptial plumes was collected at Weirs Pond on July 30; its stomach contained two crayfish. Others were seen at Gunthorpe's No. 2 Reservoir and at Body Ponds.

Florida caerulea caerulescens (Latham). SOUTHERN LITTLE BLUE HERON. "Blue Gaulding." "White Gaulding." This heron is one of the most conspicuous features of the avifauna of Antigua, abounding in the dry canefields of the inhabited parts of the island, as well as at the ponds and flashes. White, blue, and pied birds were all common at the time of my visit. An almost completely blue male was collected at Dead Sands Bay on August 6. Its stomach contained 7 grayish blue crabs with a shell about 15 millimeters in width; 27 dragonfly naiads; a bug, *Pelocoris femoratus*; and 5 Stratiomyid larvae, *Odontomyia*.

Butorides virescens maculatus (Boddaert). WEST INDIAN GREEN HERON. Tolerably common. Seen at Vernon Pond (a female with empty stomach taken on July 30), The Narrows, Carlisle Pond, Donovan's Pond, Gunthorpe's No. 2 Reservoir, and on Great Bird Island and Long Island.

Nyctanassa violacea violacea (Linnaeus). YELLOW-CROWNED NIGHT HERON. "Crab Gaulding." Common resident. Many adult and im-

mature birds were noted at Body Ponds, Church's Bay Lagoon, Five Islands, Winthorpe's, and on Great Bird Island. A male with nuptial plumes was collected at Mercer's Creek on July 30. Its stomach was empty.

Nycticorax nycticorax hoactli (Gmelin). BLACK-CROWNED NIGHT HERON. Status uncertain; listed by Cory.

Phoenicopterus ruber Linnaeus. FLAMINGO. Clark (Auk, 1905, p. 318) states that the Flamingo was found casually on Antigua until about 1860, on the basis of a statement by Mr. Francis Coull that he had seen several in the Five Islands swamps at about that time.

Dendrocygna arborea (Linnaeus). WEST INDIAN TREE DUCK. "Whistler." From descriptions given me by Mr. Box and others I feel very sure that the bird known in Antigua as the "Whistler" is this species, but am placing it in the hypothetical list, as it has not been reported by any ornithologists, and no specimens have been obtained. Mr. Box informs me that on October 8, 1932 he flushed two large Ducks from the vicinity of a nest containing 11 dull whitish eggs, much larger than those of the Bahama Duck, on the ground under some mangroves on Maid Island.]

Dafila acuta tzitzihua (Vieillot). PINTAIL. "Duck." The only record I can find is that of Bent (U. S. Nat. Mus. Bull. 126, 1923, p. 144), and as he does not state the source of his information, I am forced to relegate the species to the hypothetical list.]

Dafila bahamensis bahamensis Linnaeus. BAHAMA DUCK. "White-throat Duck." Fairly common resident. Sixty were observed at Church's Bay Lagoon August 6, and the same day four adults and a half-grown young were seen at Dead Sands Bay. August 9 on Maid Island a female was flushed from a nest on the ground not far below the top of the islet, at an elevation of about twenty feet, and a distance of about forty feet from a sandy beach. The nest was well concealed in a tuft of *Sporobolus virginicus* grass, and had no lining, consisting merely of a hollow in the grass to receive the eggs, which were five in number, of a light buff color, and measured 49 x 31.5 millimeters. In addition to the localities already mentioned, Bahama Ducks were observed at Gunthorpes No. 2 Pond, Five Islands, and on Long Island.

Oxyura jamaicensis jamaicensis (Gmelin). WEST INDIAN RUDDY DUCK. The Ruddy Duck has not previously been recorded from Antigua. On August 1 a flock of 15, only one of which was in male plumage, was noted at Dead Sands Bay, and a male and female were collected from the flock. The remainder of the flock was seen on subsequent days. The male is in the brown plumage, but is beginning to show some red feathers. It shows the following measurements: Culmen 39.2; breadth of bill at widest part 24.1; wing (arc) 131.0; wing (flat) 138.5; tarsus 32.9; tail 81.0 millimeters. The corresponding measurements for the female are 42.0; 23.0; 134.9; 141.0; 33.0; and 92.8 millimeters. These specimens are

remarkable for their very long tails; the other measurements agree well with those of Puerto Rican examples.

Buteo platypterus insulicola Riley. ANTIGUA BROAD-WINGED HAWK. "Chicken Hawk." This form of the Broad-winged Hawk is one of the few birds the known range of which is confined to Antigua. There are probably less than a hundred individuals living to-day, although due to their conspicuousness they are frequently observed in widely separated parts of the island. I have recorded the species at Body Ponds, Sugar Loaf Mountain, Belmont Estate, Dead Sands Bay, and Indian Creek, and collected a female at Body Ponds on August 7. Its stomach contained 7 large grasshoppers, *Schistocerca* sp. Mr. Box has recently sent for my examination a specimen which he secured at Mount Joshua on December 9, 1933. Despite the large numbers of these Hawks that are shot each year by planters, they seem to be quite far from the point of extermination, but some protective measures would be advisable in an attempt to save an interesting, and, to a large extent, beneficial bird.

Pandion haliaetus carolinensis (Gmelin). OSPREY. "Eagle." One was observed at Five Islands on August 10. Previously recorded by Ober (seen September 1, 1877).

Falco peregrinus anatum Bonaparte. DUCK HAWK. Mr. Box has sent me an immature specimen taken at Winthorpe's on December 23, 1933. He remarks that its stomach contained the remains of small birds, and that it was said to have taken Pigeons shortly before its capture. This is the first positive record of the Duck Hawk for Antigua, although Ober recorded it on hearsay evidence.

Falco columbarius columbarius Linnaeus. PIGEON HAWK. I have recently received from Mr. Box a specimen taken at Scotts Hill on December 18, 1933, constituting the first Antiguan record for the species.

Falco sparverius caribaeorum Gmelin. LESSER ANTILLEAN SPARROW HAWK. "Killi-killi." Rather uncommon. The stomach of a male collected at Long Lane on July 30 contained two large *Schistocerca* grasshoppers, while another taken at Dead Sands Bay had eaten an *Anolis* lizard and a grasshopper. The species was also observed at Five Islands, The Narrows, St. John's, Weirs, and Sugar Loaf Mountain.

Colinus virginianus virginianus (Linnaeus). QUAIL. Introduced many years ago. In 1877 Ober found Quail "in sufficient numbers to make good sport," and collected a male. Winch collected three specimens for Cory in 1890. It must have become extinct soon after that, as Branch found none in 1903, and at the time of my visit old settlers informed me that it became extinct very soon after the introduction of the mongoose.

Rallus longirostris manglecola Danforth. ANTIGUA CLAPPER RAIL. Plentiful in the mangroves at Five Islands, where about a hundred could be heard calling any day, but not observed elsewhere. Two specimens collected (a male on August 10, and a female on the 8th) proved to represent a new form, distinguished chiefly by its long bill and short tarsus,

which I have recently described in the Proceedings of the Biological Society of Washington. The stomachs of these specimens contained Fiddler Crabs (*Uca* sp.).

Gallinula chloropus portoricensis Danforth. ANTILLEAN GALLINULE. "Red-seal Coot." Common; observed at numerous small ponds, and in many of the mangrove swamps. A beautiful breeding pair was collected at Body Ponds on August 5. On July 31, 1931, on a previous brief visit to Antigua, an adult followed by three half-grown young was observed on a small pond near St. John's. The measurements of the pair collected are as follows, the first measurement given being in each case that of the male: Wing (arc) 168.2, 156.1; wing (flat) 174.0, 159.0; tail 78.3, 77.2; tarsus 54.1, 52.0; bill from gape 31.0, 28.9; culmen with frontal shield 49.0, 45.0; width of frontal shield 15.8; 12.2 millimeters. The coloration agrees well with that of specimens from Santo Domingo, Puerto Rico, St. Thomas, and Virgin Gorda in my collection.

Fulica caribaea Ridgway. CARIBBEAN COOT. "White-seal Coot." Sixty were noted at Dead Sands Bay on August 1, and forty on August 6 and 12, and four at Gunthorpe's No. 2 Pond on August 3. One of these (a female) was collected. Its measurements are as follows: Wing (arc) 170.5; wing (flat) 180; tail 54.1; culmen with frontal shield 53.0; depth of bill at base 15.3; length of frontal plate 20.6; width of frontal plate 10.8 millimeters.

Charadrius semipalmatus Bonaparte. SEMIPALMATED PLOVER. Two noted at Dead Sands Bay on August 12. Not previously recorded from Antigua.

Pagolla wilsonia rufinucha (Ridgway). RUFOUS-NAPED PLOVER. Common resident; observed at many points on the coast, and also on Long Island and Maid Island. Not previously recorded from Antigua. The stomach of a female collected at Corbizon Point on July 29 contained fragments of small crabs.

Pluvialis dominica dominica (Müller). GOLDEN PLOVER. Migrant; apparently formerly common. Ober describes their arrival in large flocks. Mr. W. G. Heath of Parham writes me in a letter regarding these birds "In my early days they used to come regularly every year, following the first stormy weather in August, in great flocks, flying always from the west, and were shot in great numbers over decoys. . . . They invariably arrived about daybreak flying in crescent formation. They come only rarely now, and in smaller flocks."

Squatarola squatarola cynosurae Thayer and Bangs. BLACK-BELLIED PLOVER. One observed at Long Island on August 9 constitutes the first record for the Antigua region.

Arenaria interpres morinella (Linnaeus). RUDDY TURNSTONE. Not previously recorded from Antigua. A male was collected at Corbizon Point on July 29, and others were observed subsequently at Five Islands, Winthorpe's, and on Long Island. The stomach of the specimen collected contained many sedge seeds (*Abildgradia monostachya*) and sand.

Capella delicata (Ord). WILSON'S SNIFE. Reported by Ober on hearsay evidence. Mr. W. G. Heath informs me that "it arrives about November, and only stays a short time."

Phaeopus hudsonicus (Latham). HUDSONIAN CURLEW. Migrant; recorded by Ober. Mr. W. G. Heath also informs me that formerly Curlews were occasionally shot.

[Bartramia longicauda (Bechstein). UPLAND PLOVER. "Cotton-tree Plover." This species is listed hypothetically on the basis of a description given me by Mr. W. G. Heath of the "Cotton-tree Plover," which he says is rarely seen, is solitary, and lives in plowed lands.]

Actitis macularia (Linnaeus). SPOTTED SANDPIPER. Although this is the most widely distributed and one of the commonest shorebirds in Antigua, for some reason it has not previously been recorded. It was found at practically all points on the coast as well as at many interior ponds, and also on Long Island, Great Bird Island, and Maid Island. The first record was July 29 at Corbizon Point. A female in breeding plumage, with spotted breast, was taken at Old Road on August 1. It had eaten small crustaceans.

Tringa solitaria solitaria Wilson. SOLITARY SANDPIPER. A female was collected August 1 at Walling's Reservoir.

Catoptrophorus semipalmatus semipalmatus (Gmelin). WILLET. Three were seen and a male collected at Corbizon Point on July 29; its stomach contained small crabs. Three more were noted at Church's Bay Lagoon on August 12.

Totanus melanoleucus (Gmelin). GREATER YELLOW-LEGS. "Piker." One noted at Corbizon Point on July 29; two at Old Road August 1; five at Dead Sands Bay August 6, and 25 at Church's Bay Lagoon the same day.

Totanus flavipes (Gmelin). LESSER YELLOW-LEGS. Common migrant, though not previously recorded from Antigua. 100 were seen at Corbizon Point on July 29; 200 at Dead Sands Bay August 6; 250 at Five Islands the same day, and lesser numbers at other localities.

Pisobia melanotos (Vieillot). PECTORAL SANDPIPER. Six noted at Dead Sands Bay on August 6, and two on the 12th. A female collected on the former date had eaten six Stratiomyid larvae (*Odontomyia* sp.). First record for Antigua.

Pisobia fuscicollis (Vieillot). WHITE-RUMPED SANDPIPER. One observed at Dead Sands Bay August 6; first record for Antigua.

Pisobia minutilla (Vieillot). LEAST SANDPIPER. Common migrant, observed at many points on Antigua, and also on Long Island. One was collected at Yepson Pond on August 2, and five at Dead Sands Bay on August 6. One bird had eaten exclusively insects, including Carabid beetles and small coleopterous larvae. Not previously recorded from Antigua.

Limnodromus griseus griseus (Gmelin). DOWITCHER. Six were

observed on some mudflats by a small salt lagoon at Winthorpe's on August 9, and a male collected. Another male was collected the same day on Long Island. Both birds had eaten some small seeds, while one had also eaten a small crab, and the other some extremely minute snails. Not previously recorded from Antigua.

Micropalama himantopus (Bonaparte). STILT SANDPIPER. On August 2 a flock of fifty was noted swimming like Ducks in the center of Five Islands Salt Pond. Occasionally a few would approach the shore to feed, but when alarmed would return to the main flock. A female was collected from this flock. On August 9 five were observed at Winthorpe's, and a female collected. The stomachs contained seeds, small crustaceans, and the larvae of insects. Not previously recorded from Antigua.

Ereunetes pusillus (Linnaeus). SEMIPALMATED SANDPIPER. Twelve noted at Corbizon Point July 29, and two males collected. Both stomachs contained exclusively black, pointed seeds of sedge (*Abildgradia monostachya*). One was observed at Weirs Pond July 30, and a few at Yepson Pond August 2. Not previously recorded from Antigua.

Himantopus mexicanus (Müller). BLACK-NECKED STILT. Common, and apparently breeding. Noted at Corbizon Point, Five Islands, Church's Bay Lagoon, and Dead Sands Bay. The stomach of a male collected at Corbizon Point on July 29 contained a small crab, and some Stratiomyid larvae (*Odontomyia* sp.).

Larus atricilla Linnaeus. LAUGHING GULL. Seen commonly at many points on the coast. An adult male collected at Yepson Pond on August 2 had eaten a fiddler crab (*Uca* sp.). A few birds were noted on Long Island on August 9, and about 25 on Great Bird Island on August 3. The same day about 20 were present on Hell Gate Island, including three young unable to fly, proving the nesting of at least one pair. One of the young was collected. Its stomach contained the remains of fishes and fragments of the shells of marine mollusks. I believe this constitutes the first definite West Indian breeding record for the Laughing Gull.

Sterna hirundo hirundo Linnaeus. COMMON TERN. Ten observed at St. John's July 31, 1931 (on a previous visit to Antigua), and five at Long Island August 9, 1933. Not previously recorded from Antigua.

Sterna dougalli dougalli Montagu. ROSEATE TERN. Reported by Ober to breed in large numbers on islands and rocks offshore, and collected by Winch in 1890. Mr. Marion Moore informs me that in April large numbers of white Terns, apparently this species, breed on Great Bird Island, but none was seen at the time of my visit. The only Roseate Terns noted by me were three on Long Island August 9.

Sterna fuscata fuscata Linnaeus. SOOTY TERN. A few were seen on Great Bird Island and Hell Gate Island on August 3, but they were apparently not breeding at the time. A female was collected on Hell Gate Island. It had eaten three small fishes and two crab larvae.

Sterna anaethetus melanoptera Swainson. BRIDLED TERN. A few

were present on Hell Gate Island on August 3, and a male was collected. Its stomach was empty. Not previously recorded from the Antigua region.

Sterna antillarum antillarum (Lesson). LEAST TERN. Common and breeding at the time of my visit. Breeding colonies were noted on an island in the lagoon at Corbizon Point, on Guana Island, and on Water Rock, opposite Rabbit Island. At the latter locality new-hatched young were found on August 3. These Terns were also noted at numerous localities on Antigua, and on Long Island and Maid Island. A female was collected at Corbizon Point on July 29.

Thalasseus maximus maximus (Boddaert). ROYAL TERN. Two noted at Goat Head Lagoon August 1, and at St. John's on August 2 and 17.

Thalasseus sandvicensis acufavidus (Cabot). CABOT'S TERN. Collected by Winch in 1890.

Anotis stolidus stolidus (Linnaeus). NODDY TERN. About 2000 pairs frequented the cliffs on Great Bird Island on August 3, and about 200 pairs those on Hell Gate Island the same day. Many old nests were in evidence, but no eggs or young were observed. A male was collected on each island. One had eaten small fishes, while the stomach of the other was empty. Not previously recorded from Antigua.

Columba leucocephala Linnaeus. WHITE-CROWNED PIGEON. Common and widely distributed on Antigua, and one was observed on Great Bird Island. On July 26 a pair was building a nest in a thick-foliaged tree right in the city of St. John's.

Columba squamosa Bonnaterre. SCALED PIGEON. "Red-headed Pigeon." Apparently scarce. A few were observed on Sugar Loaf Mountain, at Walling's Reservoir, and Christian Valley.

Zenaida zenaida aurita (Temminck and Knip). ZENAIDA DOVE. "Mountain Dove." Common and widely distributed on the main island; also observed on Guana Island, Great Bird Island, Hell Gate, and Long Island. The stomach of a male collected near Morn's Bay on August 1 contained 10 fruits of *Solanum bahamensis*, 15 small leguminous seeds, 1 samara of *Stigmaphyllon*, 60 seeds of *Jatropha gossypifolia*, and a ground pearl, *Margarodes* sp.

Columbigallina passerina trochila Bonaparte. ANTILLEAN GROUND DOVE. Common and widely distributed; seen on Great Bird Island, Long Island, and Maid Island, as well as at many points on the main island. The stomach of a male collected at Indian Creek on August 7 contained seeds, mostly leguminous, and a ground pearl, *Margarodes* sp.

Oreopeleia mystacea mystacea (Temminck). BRIDLED QUAIL DOVE. "Partridge." Rare. One was heard July 28 in the mesophytic forest on Sugar Loaf Mountain.

Coccyzus minor rileyi Ridgway. ANTIGUA MANGROVE CUCKOO. "Soursop Bird." Locally tolerably common in dense brushy regions. A male collected July 30 on Diamond Estate had eaten three *Tenebrionid*

beetles. Also observed at Willok's, Gunthorpe's, Falmouth, and Dead Sands Bay.

Coccyzus americanus americanus (Linnaeus). YELLOW-BILLED Cuckoo. Winch collected a specimen for Cory in 1890.

Speotyto guadeloupensis amauro Lawrence. ANTIGUA BURROWING OWL. Extinct. Ober collected three, including the type, in 1877, and Winch collected specimens in 1890. Branch found none in 1903. It is said to have become extinct soon after the introduction of the mongoose, and only the old-timers among the residents can remember it. Mr. W. G. Heath gives me his recollections regarding it in the following words: "As a boy I used to see the small Owls living in burrows in a road cutting of marl. . . . It appeared only at dusk. It was never very plentiful as far as I know."

Orthorhynchus exilis exilis (Gmelin). CRESTED HUMMER. Observed commonly at many localities on the main island, and on Great Bird Island and Long Island.

Sericotes holosericeus holosericeus (Linnaeus). BLUE-BREASTED HUMMER. Common and widely distributed. Observed also on Maid Island. A female was collected on Sugar Loaf Mountain July 28, another at Body Ponds August 5, and a male on Maid Island August 9. Chalcid wasps constituted 49 per cent of the contents of the three stomachs. Cucujid beetles, other small Coleoptera, mosquitoes, Cicadellidae, and a small seed were also found.

Eulampis jugularis (Linnaeus). RED-THROATED HUMMER. One was observed at very close range in a lime plantation at Body Ponds on July 27. It is unfortunate that I did not have my gun at hand to collect it, as it constitutes the first record for Antigua.

Megaceryle alcyon alcyon (Linnaeus). BELTED KINGFISHER. Winter visitor, probably common. Branch collected a male October 23, 1903.

Tyrannus dominicensis dominicensis (Gmelin). GRAY KINGBIRD. Accidental straggler; listed by Ridgway.

Tyrannus dominicensis vorax (Vieillot). LARGE-BILLED KINGBIRD. "Loggerhead." Abundant and universally distributed resident. Observed also on Great Bird Island, Long Island, and Maid Island. The stomach of a female collected at Sweet's Village on August 5 contained four *Polistes* wasps.

Elainea martinica riisii Sclater. ANTILLEAN ELAENIA. Common wherever there are thick stands of trees or bushes on the main island; also observed on Great Bird Island, Long Island, and Maid Island. The stomachs of a female collected July 28 on Sugar Loaf Mountain and of a male from Goat Head August 1, contained exclusively the fruits of *Solanum bahamensis*.

Progne dominicensis (Gmelin). CARIBBEAN MARTIN. "Swallow." Observed at St. John's, Johnson's Point, Dead Sands Bay, Shirley Heights and Indian Creek. The stomach of a male collected at Johnson's Point

on August 1 was jammed with fragments of black Hydrophilid beetles, and also contained one Hemiptera (*Catorintha* sp.). Not previously recorded from Antigua.

Margarops fuscatus fuscatus (Vieillot). PEARLY-EYED THRASHER. "Thrush." Fairly common; found chiefly in the mesophytic woods. The stomach of a female collected near Walling's Reservoir on August 1 contained five fruits which were identified by Mr. Box as *Tabernaemontana citrifolia*, and two unidentified fruits. That of another female collected at Christian Valley on August 6 contained one large and 18 small drupes. The species was also observed at Fig Tree Hill, Body Ponds, and English Harbour.

Allenia apicalis (Hartlaub). SCALY-BREADED THRASHER. "Thrush." Apparently very rare. One was observed at Fig Tree Hill on August 1.

Vireo calidris barbadensis Ridgway. BARBADOS VIREO. Common and generally distributed; breeds. Not observed on the outlying islets. The stomach of a male collected on Sugar Loaf Mountain July 28 contained a small Cerambycid beetle and a small seed.

Coereba dominicana (Taylor). DOMINICA HONEY CREEPER. "Yellow-breast." Abundant and generally distributed resident on the main island; observed on Great Bird Island, Long Island, and Maid Island. A male was collected on Sugar Loaf Mountain July 28.

Dendroica petechia barthelemica (Sundevall). GOLDEN WARBLER. "West Indian Canary." Very common resident, widely distributed in the mangroves, xerophytic brush, and even in woods approaching a mesophytic type. Observed on Rabbit Island, Red Head Island, Long Island, and Maid Island in addition to the main island. A female was collected at Corbizon Point July 29, a female at Collins' Woods on July 30, and a male the same day at Willok's Village. The stomachs of all three contained finely comminuted insects.

Dendroica discolor discolor (Vieillot). PRAIRIE WARBLER. Winter migrant; collected by Branch.

Seiurus aurocapillus aurocapillus (Linnaeus). OVEN-BIRD. Winter migrant; collected by Branch.

Seiurus noveboracensis noveboracensis (Gmelin). NORTHERN WATER-THRUSH. Winter migrant; collected by Ober and Branch.

Seiurus motacilla (Vieillot). LOUISIANA WATER-THRUSH. Winter migrant; collected by Ober and Branch.

Setophaga ruticilla (Linnaeus). AMERICAN REDSTART. Winter migrant; collected by Ober and Branch.

[**Icterus** sp. ORIOLE. Mr. Box has given me a clear description of an oriole which he observed in woodlands above Wetheralls, near the north-west extremity of the island, on November 4, 1933. This may possibly be an escaped cage bird, or a stray from Montserrat or other island where Orioles occur, as it does not seem likely that so conspicuous a bird as an Oriole could be a resident of Antigua and have been overlooked until now.]

Holotrisacus fortirostris fortirostris (Lawrence). BARBADOS GRACKLE. "Blackbird." Introduced and locally common. A male and female were collected from a flock of about fifty which was noted in the fields with cattle and sheep at Cade Bay on August 1. Five were seen at Dead Sands Bay on August 6. On a previous visit to Antigua a number were noted near the city of St. John's on July 31, 1931. One stomach contained two large noctuid caterpillars, a grasshopper, and a spider. The other bird had eaten seven Lepidopterous larvae, an earwig, a small fresh water snail, and the leaf of a sensitive plant (*Mimosa*). The wing of the male collected measures 103.8 and of the female 91.2 mm.

Tanagra flavifrons flavifrons (Spartmann). LESSER ANTILLEAN EUPHONIA. Probably a rare resident; known from Antigua only from a specimen collected by Branch in 1903.

Piranga erythromelas Vieillot. SCARLET TANAGER. Accidental migrant. A specimen was collected by Winch in 1890.

Loxigilla noctis ridgwayi (Cory). ANTIGUA BULLFINCH. "Robin." "Sparrow." Probably the most abundant and generally distributed bird found in Antigua. Also noted on Great Bird Island and Long Island. On July 28 a nest was collected in lianas of the genus *Gonania* attached to a Red Cedar tree (*Cedrella odorata*) 40 feet above the ground in the mesophytic forest on Sugar Loaf Mountain. The nest contained two fresh eggs, white spotted all over with red. Birds in the plumage of the female or immature male are frequently seen singing. The song is a somewhat shrill, unmusical, monotonous *szwee-szwee-szwee*, this syllable repeated from five to eight times in rapid succession. Specimens were collected on Sugar Loaf Mountain and at Long Bay.

Tiaris bicolor omissa Jardine. CARIB GRASSQUIT. "Sparrow." "Cane-bird." Very abundant in cleared country, and also found in regions of xerophytic brush. It is one of the few birds that feed freely in cane-fields. Mr. Box tells me that he has seen Grassquits pecking through cane trash to get at the mealy bugs. Observed on Long Island and Maid Island. A male was collected at Corbizon Point July 29, another at Mercer's Creek July 30, and a third at Belmont Estate August 5. The stomachs of all three contained nothing but minute seeds.

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A NEW SPECIES OF RAIL FROM PARAGUAY.

BY H. B. CONOVER.

A SHORT while ago, I received in a shipment of birds from Paraguay, a single specimen of a small Porzanine rail which I was unable to identify. Its coloration does not fit modern descriptions of any Rails known to me, and a search through an edition of Azara reveals no Rail like it described by that author.

In structure it appears to belong in the genus *Laterallus*. The secondaries are only slightly shorter than the primaries. The tarsus, however, is relatively shorter than that of other species in this genus, and the bill is relatively higher at the base.

I have been able personally to compare it with the following species and subspecies of the genus: *L. melanophaeus melanophaeus*, *L. m. albigularis*, *L. m. cinereiceps*, *L. ruber*, *L. exilis*, *L. leucopyrrhus*, *L. viridis*, *L. levraudi*, *L. jamaicensis jamaicensis*, *L. j. coturniculus*, *L. j. salinazi*.

I am indebted to Mr. James L. Peters of the Museum of Comparative Zoology for comparing it with the specimens of Porzanine Rails in that institution, where all known species were available except *Laterallus levraudi*.

Laterallus xenopterus spec. nov.

Type from Horqueta, Paraguay, 40 kilometers east of Paraguay River, Long. 57° 10' W., Lat. 23° 24' S. No. 11,221, adult female in the Conover Collection, Field Museum of Natural History, Chicago. Collected November 17, 1933, by Alberto Schulze. Original number 630.

Characters.—Differs from all described species of the genus *Laterallus* by having the upper wing coverts and scapulars brownish black, broadly barred with white, and by having the foreneck, chest and breast buffy ochraceous. In coloration of the top and sides of the head and neck and of the mantle it resembles *Laterallus leucopyrrhus*. In the barring of the upper wing coverts it most nearly resembles *Porzana spiloptera*, which however, is a gray-breasted species of another genus.

Description.—Top of head, sides of face to below ear coverts, top and sides of neck, and mantle dark rufous (nearest to chestnut of Ridgway). Loes brownish gray. Back and rump brown (tail lacking). Upper wing coverts and scapulars brownish black, broadly barred with white. Bend of wing white. Primaries and secondaries brown. Throat cream. Front

and sides of neck, chest and upper breast buffy ochraceous (clay color of Ridgway). Lower breast, belly and vent white. Sides of body and flanks white, broadly barred with brownish black. Under wing coverts white, slightly mottled with dusky. Axillaries brown at base, white at the tip. Bill (in dried skin) dusky, tip of lower mandible light horn. Feet (in dried skin) dark brown. Wing (flat) 89, culmen 16, tarsus 27.4, middle toe (with claw) 30.3 mm.

6 Scott St., Chicago, Ill.

GENERAL NOTES.

Occurrence of Wilson's Petrel (*Oceanites oceanicus*) in Franklin County, New York.—On August 28, 1933, Mr. Robert F. Hale of Malone, N. Y., addressed a communication to the New York State Museum in which he reported the observation and capture of a "Petrel" at Lake Titus in Franklin County. A part of Mr. Hale's letter reads as follows:

"The bird was first seen on the lake by my family on Friday afternoon, August 25. They did not know what it was and were unable to identify it. On the morning of the 26th we saw it again and an hour later as I was returning to the camp I saw it from a boat and picked it up in a landing net.

"The bird was utterly exhausted and it is quite evident that it had been blown inland by the terrific coastal storm of last week. We had an east wind here for nearly 48 hours, accompanied by heavy fogs and rain. The wind was not hard, but blew steadily."

Mr. Hale had the specimen made into a study skin by a Malone taxidermist and very generously donated it to the New York State Museum. The bird is a female Wilson's Petrel (*Oceanites oceanicus*). Although the flight feathers are in good condition the body feathers exhibit some evidence of molt. The specimen has been mounted and is now displayed in the exhibit series of birds at the State Museum (Acc. No. 5261).

Lake Titus has an elevation of approximately 1400 feet above the sea and a little more than 200 miles from the nearest Atlantic coast line.

I have discovered only two published records of the species for inland New York. Davison (*The Auk*, 1884, 294) reports a specimen killed just outside the city limits of Lockport, Niagara County, in October, 1875. Eaton (*Birds of New York*, 1910, 165) gives that record and cites an additional specimen from Orleans County, collected in November, 1882.—DAYTON STONER, *New York State Museum, Albany, N. Y.*

King Eider (*Somateria spectabilis*) in Wisconsin.—In view of the fact that authentic records establish the King Eider as of rare occurrence in Wisconsin, the taking of another specimen will be of interest.

On November 8, 1933, at Muskego Lake, Wisconsin, which is about 18 miles inland from Lake Michigan, a duck-hunter shot a male bird still in the brown plumage. The bird came to his decoys with seven Mallards. The specimen is now in the Milwaukee Public Museum.—O. J. GROMME, *Milwaukee Public Museum.*

A Late Flock of Swans at Perry Point, Md.—On April 29, 1934, I was surprised to find a flock of Whistling Swans (*Cygnus columbianus*) still present at Perry Point, Md., where we always look for them during the spring migration. There were about 500 birds in the flock and only about 25 seemed to be in immature plumage. This proportion may not be strictly accurate as they were some distance out in the Bay but they

looked unusually white and only a few showed dark necks. It would seem that the young must have completed the molt at this date.—JOSEPH W. TATUM, Haddonfield, N. J.

Late Date for the Whistling Swan in Washington.—Three Whistling Swans (*Cygnus columbianus*) were seen at Eighteenth Street and Columbia Road on April 18, 1934, at 6:30 p. m. They were flying very high, but nevertheless were heard above the din of heavy traffic. This bird is rare in spring in this region, and has not previously been reported in April, the latest date being March 29 in 1927 (see Cooke, Proceedings of the Biological Society of Washington, vol. 42, p. 23, March 25, 1929).—AUSTIN H. AND LEILA F. CLARK, U. S. National Museum.

An Unusual Flock of Waterfowl at Harrisburg, Pa.—On the night of April 6, 1934, a large flock of Swans and Ducks settled on the Susquehanna River at Harrisburg, Pa., nearly all of which left the following night.

On April 7, the following were seen: Holboell's Grebe, mostly in summer plumage, 33; Horned Grebe, 30; Pied-billed Grebe, 10; Whistling Swan, 216, said to be the largest number ever seen here at one time; Canada Goose, 17; Mallard, 1; Black Duck, 50 (estimate); Baldpate, 75 (estimate); Shoveller, 2; Redhead, 27; Canvasback, 5; Scaup, 130 (one identified as Greater Scaup); Bufflehead, 3; Old Squaw, 1.

The Holboell's Grebes (*Colymbus g. holboelli*) were entirely new to the local bird students, several of them with many years of experience.

The birds were studied in good light with x8 binoculars at fairly close range.—W. STUART CRAMER, 216 Woodbine St., Harrisburg, Pa.

American Egrets Nesting in New Jersey.—While Egrets (*Casmerodius a. egretta*) and Little Blue Herons (*Florida caerulea*) have of late years been visiting New Jersey in ever increasing numbers, during summer and autumn, and have established night roosts of considerable size, we have had, up to the present season, no evidence of their return as breeding birds. It is therefore with great satisfaction that I am able to report the presence of about ten pairs of Egrets associated with Great Blue Herons (*Ardea h. herodias*) in a nesting community near Pennsville, in the southwestern part of the state.

The discovery of the nesting of these birds was made by Mr. Julian K. Potter, president of the Delaware Valley Ornithological Club, and one of our most tireless and reliable field ornithologists, who has requested me to publish the record. In company with Mr. Potter I visited the spot on June 3, 1934, and we could plainly see the big white birds on their nests, while an occasional individual would be seen flying off over the adjacent fields to the river marshes or returning, doubtless with food, and one was seen in a small nearby swamp busily feeding during the entire time of our visit. The tall sweet gums and maples upon which the nests are built stand in several feet of water and are surrounded by a deep muddy swamp which makes a close approach very difficult, but Mr. T. E. McMullen, who did

force his way to the colony reported that the birds had young. This was also the case with the Great Blues, whose large young could easily be seen from a distance standing on the nests and greeting their returning parents. It would seem that the Great Blues are the earlier breeders.

So far as I am aware American Egrets have not been reported nesting in New Jersey since the time of Alexander Wilson, though of course they must have persisted as breeders long after that. Let us hope that they may not be molested in any way and that year by year their numbers may increase.

The presence of a rather large breeding colony of Little Blue Herons has already been reported in Delaware, in nearly the latitude of Cape May, so that it is easily possible that some of these birds also may nest in the southern part of New Jersey in some of the Night Heron colonies.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

American Egret at Bridgewater, Mass., in Spring.—On April 22, 1934, it was our good fortune to have an American Egret (*Casmerodius a. egretta*) feeding at the edge of a small marsh pond where a number of people viewed it at fairly close range. Though disturbed at various times to the point of flight, the bird would alight in a nearby pine tree or even fly out of sight but would return later to the pond's edge where it stayed most of the day.—HAROLD W. COPELAND, *Bridgewater, Mass.*

Yellow-crowned Night Heron in Rhode Island.—On the night of April 16, 1934, in a wild deluge of wind and rain, a very fine specimen of the Yellow-crowned Night Heron (*Nyctanassa violacea*) was secured alive by Mr. Joseph Schwartz who found it on Broadway under the glass portico of the Paramount Theater. It was a male in good plumage and apparently uninjured.

The only other local records that I know of were one shot by C. M. Kennedy on April 23, 1886, near Fall River, and a young bird secured by J. Livermore at Newport, August, 1892 (Auk, 1894, p. 177).—A. O'D. TAYLOR, *Powell Ave, Newport, R. I.*

The Swallow-tailed Kite in South Carolina.—On March 27, 1932, at the Grove Plantation house near Adams Run, S. C., my attention was called to a strange bird circling over the live oaks. I immediately recognized the bird as a Swallow-tailed Kite (*Elanoides forficatus forficatus*). He wheeled gracefully above the oaks directly in front of the house several times, affording an excellent view of his long forked tail. Then, apparently having satisfied his curiosity or failing to discover any suitable provender, he swung out of sight.

About three-quarters of a mile away, over a patch of brush bordering the ricefields, he executed a series of aerial acrobatics which would have put any human stunt flyer to shame. Outlined against the overcast sky he darted to and fro, skimming low above the alders, then plunging, twisting, and soaring, as if in pure ecstasy.

Although this species was formerly not uncommon even further north than South Carolina, it has not been reported in that state for several years.—J. WILLCOX BROWN, *Montchanin, Delaware*.

The Golden Eagle in West Virginia.—For some years I have been interested in the unusual abundance of the Golden Eagle (*Aquila chrysaetos canadensis*) in Pendleton County, West Virginia, and in the surrounding territory. My attention was first called to five mounted specimens of the bird in a hotel in the village of Franklin. The owners assured me that all had been taken locally, and that the bird was quite common. The next day, July 20, 1929, I observed at fairly close range two individuals flying over North Fork Mountain, about ten miles from Franklin. Subsequent visits to this region have confirmed the regular occurrence of the birds at all seasons of the year.

My additional notes, are as follows: August 30, 1929, three individuals seen at North Fork Mountain and Circleville. May 31, 1930, seven individuals seen at one time near top of North Fork Mountain; these were observed by Fred E. Brooks and the writer, and were studied carefully at close range with 6x glasses, the feathered tarsi being especially noted. One bird flew from a cliff not more than seventy-five feet from us, and showed very distinctly the white tail-base. Later in the day a single individual was seen at Seneca Rocks, fifteen miles away, very possibly one of the same ones seen earlier.

September 20, 1931, two birds seen at the peculiar Rock mountain known as the Devil's Backbone, in Highland County, Virginia, only a few miles from the Pendleton County, W. Va., border. The same day a single individual was seen at North Fork Mountain. June 1, 1932, three seen at Circleville, and one at Seneca Rocks.

The Postmaster at Circleville has an unusually large specimen mounted. He tells me that the birds occur there every month of the year. A recent issue of the 'West Virginia Wild Life Magazine' records a Golden Eagle killed at Petersburg, Grant County, W. Va., in December, 1933, and another captured alive at Horton, Randolph County, W. Va., in the same month. Both places are near Pendleton County.

Persistent inquiry has failed so far to uncover a breeding record for the region that can be accepted. Many persons have told me that the birds do breed there, but actual data are lacking. Nevertheless, it is my conviction that further investigation will show that the birds do breed in the locality. Too many have been seen there during the early summer months to be accounted for by dismissing them as wandering individuals.—MAURICE BROOKS, *French Creek, W. Va.*

Golden Eagle in North Louisiana.—Ernest G. Holt adds the Golden Eagle (*Aquila chrysaetos canadensis*) to the Louisiana list (Auk, 1933, 355) which was omitted in 'Birds of Louisiana' (Bull. 20, La. Dept. of Conservation, 1931), but E. A. McIlhenny is of the opinion (Auk, 1933, 431) that Mr. Holt has mistaken the immature Bald Eagle for the Golden Eagle.

The two above notes having stimulated my interest, I made an investigation of a report that came out in a local newspaper of a Bald Eagle being caught near Pioneer, Louisiana. Upon making the investigation of this specimen, I found it to have all the identification marks of an immature Golden Eagle. The most conclusive was the base of the tail being white and the tarsus being covered to the toes with ochraceous-buff feathers.

The bird was caught January 12, 1934, in a No. 2 Victor steel trap which was baited with a portion of a six-weeks old pig which had been caught the day before. This Eagle had caught six other pigs from this same brood before it was captured. On February 24, 1934, it broke the cord by which it was tied and attempted to fly away, but was killed. Its skin is preserved for future reference.—JOHN S. CAMPBELL, *Bienville, La.*

Notes on the Food Habits of the Golden Eagle.—In the first week of February, 1922, we chanced to observe a Golden Eagle (*Aquila chrysaetos canadensis*), in the act of constructing a nest in a low oak tree on the hill that rises behind the buildings of Sul Ross State Teachers College at Alpine, Brewster County, Texas. Observations were made regularly at intervals of one or two days until one of the two eggs hatched. From this time on trips were made daily to the nest. Parts of animal carcasses brought in as food for the young were usually found on the rim of the nest. During one week one cotton-tail rabbit, one prairie dog, and three Sparrow Hawks, were noted. The prairie dog must have been carried at least two miles but the other items could have been obtained in the immediate vicinity of the nest.

During the winter of 1925 a fat donkey was killed along the roadside near Alpine. A large Golden Eagle fed on this carcass daily for approximately a week. This was during an especially cold and dry season. Food was scarce and the donkey was not particularly offensive for some days. These two conditions probably account for this taking of carrion.—LEO T. AND Z. E. MURRAY, *Dept. of Zoology, McGraw Hall, Cornell University, Ithaca, N. Y.*

The Status of the Duck Hawk in the Southeast.—In 'The Auk' for July 1933, page 379, brief mention is made of a paper entitled "The Falcons of the Great Smokies," by Joseph Dixon (*Amer. Forests*, June, 1933) and the author's statement, that this is the only pair of Duck Hawks nesting in the Southern States, is repeated. By way of keeping the record straight, it would appear timely to quote recent published records and to give further data, all of which will show that there are at least thirteen pairs known to be nesting in the region mentioned. The writer has spent much time afield in recent years working up the status of the Duck Hawk (*Falco peregrinus anatum*), the Golden Eagle (*Aquila chrysaetos canadensis*) and the Raven (*Corvus corax subsp?*) and has personally examined hundreds of miles of escarpments in the eastern half of Tennessee in an effort to locate these species. This examination is now about sixty percent

complete so it is quite probable that other pairs will be located in addition to those mentioned below.

The nest described by Mr. Dixon is in Sevier County, Tenn., within the Great Smoky Mountains National Park. It was originally discovered by the writer in May, 1925, who fully described it, with illustrations, in 'The Wilson Bulletin' for March 1931. In the same article he described another nest which he had found in Grundy County. During the following year he located another pair at their nesting cliff in Rockcastle Cove, in Fentress Co. and, like the two above mentioned, it was located several miles from a stream of any consequence. During the last two years these three sites have been revisited and the birds were found to be still "at home." In 'The Migrant' for March 1933, he records a pair inhabiting the cliffs above Mullins Cove in Hamilton County. In 'Tennessee Avifauna,' No. 2, "Water Birds of Reelfoot Lake, Tenn." he records a fifth pair, in the cypress swamp a few miles from the Mississippi River, where on April 24, 1932, they were making vociferous protest about a cavity in a huge cypress in which they doubtless had eggs or young. Goss in Kansas and Ridgway in southern Illinois had previously described their nesting in such a situation.

In 'The Migrant' for June 1933, F. M. Jones describes two nests examined by himself and R. B. Lyle, the finder, near Johnson City, Tenn. B. P. Tyler of that city, writes me that a third pair has been located on Roan Mountain. In the Smoky Mountains Park there are at least two additional pairs nesting within three miles of the pair first mentioned and both have been visited by the writer during the past two years. He acquainted the Park authorities with the desirability of protecting these birds and is pleased to report that they are zealously doing so. Following the Appalachians from Georgia northward, this further survey is presented. Earle R. Greene of Atlanta, writes me that on October 19, 1933, he observed three Duck Hawks off the cliffs near Cloudland in northwest Georgia. Dr. Edward Reinke of Nashville, tells me that a pair make their home in a mountain escarpment near Highlands, Macon Co., North Carolina, where he spends his summers. William Brewster, writing in 'The Auk' (1886, pp. 94-112) of a trip through this locality in 1885, said "Nearly every suitable cliff in the higher mountains was occupied by a pair of these noisy falcons." Messrs. Sprunt and Murray, in 'The Auk' (1930, p. 563) recorded seven of them on August 1, 1930, from the top of Grandfather Mountain, Avery Co., North Carolina; from the writer's knowledge of the cliffs in that region he feels reasonably sure that a systematic search would reveal one or more eyries. Dr. Murray records in 'The Raven' for June 1933, a nesting pair on Jump Mountain, in the western part of Rockbridge Co., Va. During the period, May 25-28, 1925, while exploring the country now comprising the new Shenandoah National Park in Virginia, the writer found an old Peregrine's eyrie in a cliff under the west side of Stony Man mountain and one bird was observed in the air nearby. During a conver-

sation with Col. H. J. Benschoff of Woodstock, he informed me that on April 11 of that year, while accompanying a group of young men from his school, they flushed one of the Falcons from this eyrie and amid her noisy protest, secured the four eggs from the ledge.

Eyries of this species are always plainly marked with white excreta, if they have been in use any length of time, and this serves as an aid in locating them. Apparently our southern Duck Hawks are permanent residents since I found the Fentress County pair at home in November and Mr. Tyler reports seeing a pair on December 31, at one of the eyries near Johnson City.—ALBERT F. GANIER, Nashville, Tenn.

Sandpiper Cripples.—From time to time there have appeared in the literature observations regarding the occurrence of cripples in flocks of Sandpipers.

Nichols and Harper write of *Ereunetes pusillus* (The Auk, XXXIII, 1916, 246): "The members of this species come to stool in greater numbers, probably, than any of the other Long Island shore birds, and many of them pay dearly for their gentleness and sociability, since gunners very frequently turn their weapons upon the little Oxeyes for want of bigger game. Birds with a crippled wing or dangling leg, or with only one leg, are no uncommon sight, and at times the proportion of cripples to able-bodied birds is sadly large."

These observations were made, of course, before the passage of the Enabling Act, giving effect to our treaty with Canada, which afforded shore-birds Federal protection.

Forbush, who gave considerable space to the subject in his 'Birds of Massachusetts and Other New England States' (Vol. I, 1925, 420-421), apparently felt that few actual cripples are observed, and that most of those reported are birds indulging in the characteristic one-legged posture of this group.

Bent writes (Bull. U. S. Nat. Mus. 142, 1927, 250): "Semipalmated Sandpipers like other shore birds often stand on one leg and even hop on it in feeding and they also sleep in this attitude. It is difficult to distinguish these from cripples, and one is easily deceived; the cripples seem as happy and tireless in feeding as the others."

Further evidence of crippled and one-legged Sandpipers came to my attention in the autumn of 1932, near Cape May Point, New Jersey, and as a comparison of the prevalence of cripples of this family, past and present, is not without interest, my notes may be worth recording.

On September 21, 1932, while walking along the beach that fronts on Delaware Bay near Cape May Point, I observed a flock of 43 Semipalmated Sandpipers feeding in their usual manner close to the surf, which was running in on the sand before a gentle westerly breeze. As the line of feeding birds moved gradually southward along the beach I saw that three individuals were consistently leading these methodical advances. The three birds would rise silently, but in almost perfect accord, and move perhaps

thirty feet down the beach. The remainder of the flock would follow almost immediately, in silent unison, settling to their nimble and assiduous work just short of where the leaders had stopped. Upon closer inspection I saw that the first three were cripples, each of them hobbling about on a single leg. Two displayed stumps, one having the right leg off in the middle of the tarsus, the other the right leg off directly below the ankle-joint. The third held the left leg in a dangling position, and it was obviously useless.

The fact that these cripples were the first to take wing, as already described, seems to indicate that they were not as tireless in feeding as the normal birds, which is Bent's supposition. Likewise there was no doubt as to the fact of their crippled condition, and while possibly not a common sight at the present time, actual cripples among this species do exist, and may be readily distinguished from the normal birds.—ROBERT P. ALLEN, *Nat. Assoc. Audubon Societies, 1775 Broadway, New York, N. Y.*

Black-necked Stilt (*Himantopus mexicanus*) in S. Carolina.—Since A. T. Wayne saw a pair of these birds on Sullivan's Island, S. C., in May 1881, but two specimens have been recorded in the state. On April 24, 1934, a fine specimen was seen in a pond on Bull's Island, S. C., by a group of local and visiting ornithologists. It was observed feeding and in flight; its call heard several times and ample opportunity for study of it was afforded to Messrs. John Baker, C. A. Urner, W. P. Wharton, H. R. Sass and the writer. The Stilt has never been found breeding in South Carolina, though it may prove to be something more than a straggler in view of the observations of the past five years.—ALEXANDER SPRUNT, JR., *R. F. D. No. 1, Charleston, S. C.*

The Red Phalarope off South Carolina.—Definite records for the occurrence of *P. fulicarius* from South Carolina being restricted to the capture of but one specimen and the listing of an indefinite sight record, it seems well to record a specimen seen at close range on April 22, 1934. The bird flew close to a group of ornithologists while aboard a yacht cruising in the vicinity of the Charleston Lightship, about fifteen miles offshore. It was first seen and identified by C. A. Urner and pointed out to the writer and Dr. John B. May. The specimen was not in full plumage, but the details were sufficiently apparent. Mr. Urner had had the opportunity of seeing a tremendous migration of this species last year off the New Jersey coast, in which birds of every stage of plumage were studied at close range.—ALEXANDER SPRUNT, JR., *R. F. D. No. 1, Charleston, S. C.*

Glaucous and Iceland Gulls at Brigantine Beach, N. J.—On March 24, 1934, I came upon a single Glaucous Gull (*Larus hyperboreus*) feeding with a few Herring Gulls (*L. argentatus smithsonianus*) on the beach on Brigantine Island, N. J. It was easily distinguished from the Herring Gulls by the absence of the black tips to the primaries, and was practically white all over but for a faint buffy edging to the feathers of the back. It was of noticeably heavier build than the Herring Gulls with a

greater wing spread, and was easily "cock of the walk" defending itself against all who would claim its freshly opened clams.

On March 30, I accompanied twenty-five members of the Delaware Valley Ornithological Club on an excursion to the same spot, and apparently the same Gull was awaiting us accompanied this time by another northern visitor, an Iceland Gull (*Larus leucopterus*). The latter bird was four or five inches shorter than the Glaucous Gull and was also white with a little more of the buff tint on the back and upper tail coverts, while its bill was shorter and the legs a darker shade of flesh. It stood most of the time with head drawn down on the shoulders, Plover-like. Both birds were quite tame and were easily approached.

We examined thousands of Herring Gulls on the beaches and meadows but could find no more individuals of these northern species.—WILLIAM L. BAILY, Ardmore, Pa.

Iceland Gull (*Larus leucopterus*) in Virginia.¹—On January 11, 1934, an immature Iceland Gull was seen at Cape Henry, Norfolk Co., Virginia, in company with both Herring and Ring-billed Gulls. Very satisfactory views of it were obtained, at close range, and its size made out to be intermediate between the two other species, though nearer the Herring Gull. Although a cream-colored bird, it stood out as if cut from marble among the slaty-backed birds in the flock. Its legs and feet were flesh-colored, (pink), its bill flesh-colored at the base, dark at the tip. Later, about three miles northwest of this point, a second Iceland Gull was seen, differing from the first bird in possessing two paler patches on the wings.

I believe this is the first record of the Iceland Gull from Virginia, although it has been recorded, (Helmuth: Auk, April 1920) off the North Carolina coast.—WILLIAM TOD HELMUTH, 3RD, 667 Madison Ave., New York.

Kumlien's Gull (*Larus kumlieni*) at Brigantine, N. J.—On May 12, 1934, I found an adult Gull dead on Brigantine Island, N. J. It was so far decomposed that it was impossible to save it but I preserved the skull and some of the wing feathers. I took the bird to be an Iceland Gull at the time as it agreed in size and color with that species but upon measuring the skull I found it to be about half way between the largest measurement given by Dwight (Gulls of the World) for the Iceland Gull and the smallest for the Glaucous Gull, i. e. cord of culmen 51 mm. Dwight says of Kumlien's Gull: "They are the size of *leucopterus* except that the size, especially of the bill of eastern specimens, is larger." He also says that *kumlieni* grades into *leucopterus* until the primaries reach that shade of white which identifies the latter.

From the data at hand I consider that this bird must have been *kumlieni*, which is now often regarded as a hybrid.²—W. STUART CRAMER, 216 Woodbine St., Harrisburg, Pa.

¹ This and other Gull notes published through aid of the Dwight Memorial Fund.

² Cf. record for Buffalo, N. Y., p. 393.

Possible Extension of Regular Winter Range of the Great Black-backed Gull.—The A. O. U. 'Check-List' of 1931 states that the Great Black-backed Gull (*Larus marinus*) "Winters from southern Greenland south to the Great Lakes and Delaware Bay (casually to Florida), . . ." During the past winter (1933-34) the writer has observed this bird in Delaware, Maryland, Virginia, and North Carolina in numbers that would indicate that the species occurs more than "casually" south of Delaware Bay. A single individual was observed at Rehoboth Bay, Delaware, December 14, 1933, and another January 12, 1934, feeding on the carcass of a recently killed Greater Scaup at Holland Straits, Dorchester County, Maryland, on Chesapeake Bay. F. C. Kirkwood in his 'Birds of Maryland' (1895) states that he "saw one of the birds circling over the mouth of the Gunpowder River," January 27, 1895. This seems to represent the only published record of this species for Maryland. He regarded the bird as being exceedingly uncommon south of New Jersey.

On December 21, 1933, a single adult Great Black-backed Gull was noted by the writer on Isle of Wight Bay near Ocean City, Maryland. On December 20, another was encountered at Chincoteague, Virginia. During the afternoon of February 23, 1934, seventeen adults were seen in Pamlico Sound, North Carolina, between Rodanthe and Pea Island Gun Club. Seven of these were seen in one large mixed flock in company with Herring and Ring-billed Gulls. Another was observed on the back of a recently killed Loon. On February 24, six were noted in the Sound between Rodanthe and Avon, a distance of perhaps 18 miles. On the 27th seven others were seen in a single flock with other Gulls opposite Hatteras Village, and later on the same day three more were observed about three miles south of Hatteras. In the evening of this same day six additional individuals were seen near Ocracoke. On March 2, 1934, one lone individual was observed near the junction of Currituck Sound and Roanoke Sound, North Carolina.

One Great Black-backed Gull was seen at Cape Hatteras January 14, 1933, and several others were noted farther north in Pamlico Sound a few days earlier. Miss Phoebe Knappen of the U. S. Biological Survey reports that she observed one Great Black-backed Gull at Bethany Beach, Delaware, October 1, 1932, and three at Ocean City, Maryland, October 21, 1933.

Such a large number of individuals noted as far south as Pamlico Sound and Cape Hatteras, North Carolina, would seem to indicate either an extension of range of this species or that the extremely cold weather farther north, this year, has driven the birds southward to open water. Without doubt, the frozen bays in the north have caused the Gulls to move southward. A probable increase in the Gull population may also be responsible for an extension in the winter range.—CLARENCE COTTAM, *U. S. Biological Survey, Washington, D. C.*

Brünnich's Murre in Brooklyn, N. Y.—On January 28, 1934, I saw

a Brünnich's Murre (*Uria lomvia lomvia*) at Manhattan Beach Park, in Brooklyn. It came within 35 or 40 feet of me and was observed with x8 binoculars from an elevation of about ten feet above the water. The sea was quite rough and the bird probably took refuge in the small inlet where I found it. The species is an irregular winter visitant out at sea but rarely comes in shore.—JAMES M. CUNNEEN, *St. Johns Place, Brooklyn, N. Y.*

Note on the Guadeloupe Macaw (*Ara guadeloupensis*).—Mr. Herbert W. Krieger has just been so kind as to call my attention to a passage referring to the Guadeloupe Macaw in Michael Herr's translation of J. Huttich's 'Die New Welt, der landschaften vnnd Insulen, so bis hie her allen Altweltbeschrybern vnbekant, Jungst aber von den Portugalesern vnnd Hispaniern jm Nidergenglichen Meer herfunden' published at Straszburg (Strasbourg) in 1534.

In this very rare work we read (Chapter XCII, p. 31, bottom of left and top of right column) "The island [Guadeloupe] has psytacos larger than our pheasants and not dissimilar to them in feathering, for they have divided feathers [that is, the feathers are provided with aftershafts]. Otherwise they are red in color and are present in such numbers as grasshoppers are with us, and although the forests are full of psytachen, they feed some of them so that they are better to eat. . . . When our people entered their houses they found utensils in which human flesh was cooking together with psytachen, geese, and ducks."

Ara guadeloupensis was originally described by the writer in a paper on the Lesser Antillean Macaws (The Auk, vol. 22, p. 272, July 1905) on the basis of the account given by du Tertre in 1667. The habitat was given as "Guadeloupe, ?Dominica, Martinique". In a paper on the Macaws of the Greater Antilles (The Auk, vol. 22, pp. 345-348, October 1905) the habitat as previously given was repeated. In his work on extinct birds published in 1907 Lord Rothschild said he believed that each of the three islands named had been inhabited by a distinct species of Macaw, so he restricted the name *guadeloupensis* to the Guadeloupe bird. In 1908 (The Auk, vol. 25, p. 310) I described the Macaw from Dominica as a separate species, *Ara atwoodi*, on the basis of a meager account published in 1791 in 'The History of the Island of Dominica' by Thomas Atwood.—AUSTIN H. CLARK, *U. S. National Museum.*

***Panyptila cayenensis* (Gmelin) nesting in a House.**—In July 1932, I paid a short visit to the Panama Canal Zone with Dr. Thomas Barbour. In the course of a conversation with Dr. Herbert Clark, director of the Gorgas Institute, he mentioned that Swifts had been making their nests over the lights suspended from the ceiling of the long piazzas of the Ancon Hospital. He described them as remarkable long sleeve-like nests and wondered whether the bird could be building there for the warmth or the light. Never had he seen these Swifts near houses before the previous summer, he said.

Later while we were examining the canal in his company, he said that the same birds had been nesting on the walls of the recesses built into the sides of the canal below the side walks. These nests had apparently all been cleared away in the spring cleaning, but there were Forked-tailed Swifts flying about at no very great height and I felt pretty sure that there must have been some nest left nearby. Sure enough a kind hearted foreman had glued one to the wall inside of the control house at San Miguel Lock.

We obtained permission to take the nest and a ladder was brought. I climbed up, placed my hand over the opening and carefully began to pry the nest away from the wall. Almost immediately I felt a soft body in my hand and it flashed across my mind that it might be a Tarantula. It was *Panyptila cayenensis* though, and, later, upon examination proved to be a male in breeding condition. I then held a handkerchief in my left hand under the entrance, hoping that if there should be any eggs that they would not be broken. As I pried away, they fell one by one into the handkerchief and broke. I saved one since it is the only one that I can find to have been recorded. It measures 22 mm. in length, is bluish white and has approximately the proportions of the egg of the Black Swift.

The nest is 400 mm. long and about 100 mm. in diameter. It is faun brown, this being the color of the Kapok, the seed hair of the Balsa or Corkwood Tree (*Ochroma* sp.) which forms the basis of the structure. This coarse, cottony substance is secreted in a large pod which breaks open at certain times of the year allowing the hair to protrude and it would of course be very easy for the bird to collect it. There are also other seed hairs and coarser substances such as bits of pod and small feathers woven in with the Kapok. The nest is rough outside and smooth inside and it has the appearance of having been cemented. The shelf, which is placed near the top, is quite firm and it may be that the saliva of the bird is used although this cannot be stated with any degree of certitude. There is a curtain of Kapok hanging from the lower end which probably represents an unfinished addition.

As far as I can ascertain, the nest of *Panyptila cayenensis* was first found in 1874. Salvin and Godman (Biol. Cent. Am. Aves, 2, p. 371) say that whereas there was no specimen of the bird or the nest in England at that time (1893), that Salvin had been shown a specimen with its nest which was found near the Chagres River by Dr. T. K. Merrit, discoverer of *Microchaera albocoronata*.

Richmond (Auk, 15, 1898, pp. 7-10) quotes this passage and records the finding of a nest in eastern Nicaragua. His base camp at the time was a "I. P." Ranch on the Escondido River and he found the nest affixed to a tree "possibly by the saliva of the bird." He says that the nest was gray, exactly the color of the tree and that it was only because he was looking at the bird when it entered the nest that he found it at all. There was apparently no indication that the bird was breeding and he surmises that it was simply using the nest as a place of refuge in the rainy season.

This nest was nine or ten inches long, about three inches in diameter at the entrance. It bulged slightly at the top. This bulge seems to be characteristic of nests that are suspended from the top, and also of shorter nests. We were later shown nests suspended from the ceiling of the walk-about on the upper story of the lock control house at San Miguel. They were shorter than the nest that I had procured earlier and bulged at the top.

It is of course very curious that this bird should have begun to nest close to men, even inside the walls of houses, after having lived only in the forest. Many birds in eastern North America have of course done this since the coming of the white man. The Robin, the Cliff Swallow, which still nests against rocks in the west, the Song Sparrow, the Barn Swallow and Chimney Swift—all these have changed their habits somewhat. In this case the bird is in the process of changing.

The natives are said to call this the Macqua (Hoodoo) Bird. They believe, it is said, that if the bird is captured on Good Friday that its captor may have any wish granted.—JAMES C. GREENWAY, JR., *Cambridge, Mass.*

An Unusual Red-headed Woodpecker Accident.—On January 11, 1934, some students of the Upshur County High School, Buckhannon, W. Va., brought to me a specimen of Red-headed Woodpecker (*Melanerpes erythrocephalus*) which had driven its bill so far into a red oak acorn that extrication had proved impossible, and the bird had starved to death. When found it weighed less than two-and-a-half ounces. It required a sharp pull to remove the acorn from the bill which had penetrated about three-eighths of an inch.—MAURICE BROOKS, *French Creek, W. Va.*

Scissor-tailed Flycatcher (*Muscivora forficata*) in Massachusetts.—A female was collected at West Springfield, Mass., on April 29, 1933, and is now in the mounted collection of the Museum, Boston Society of Natural History. The bird was first discovered on April 25, 1933, by George Bartlett on whose farm it appeared; he in turn informed Miss Fannie A. Stebbins. It was correctly identified two days later by Samuel A. Eliot, Jr., of Northampton, and was observed on or near the same place for several days by numerous observers including the writer, who took Ludlow Griscom and two other members of the Nuttall Club to the spot. Having obtained Bartlett's permission, the Flycatcher was collected by Mr. Griscom on the fourth day. It constitutes the first record of a specimen collected in Massachusetts.—AARON C. BAGG, 72 *Fairfield Ave., Holyoke, Mass.*

Say's Phoebe in Western Montana.—There appear to be but two published records of the occurrence of Say's Phoebe (*Sayornis saya saya*) in Montana west of the continental divide. The first is that of a bird seen by the writer at Libby on July 20, 1924 (*Condor*, XXIX, 1927, p. 159). The second, published by Miss Caroline Wells, records the nesting of a pair of Say's Phoebes in Missoula, in 1929 (*Condor*, XXXII, 1930, p. 128).

Additional records have been obtained by the writer at Fortine, in the extreme northwestern corner of Montana. Solitary Say's Phoebes were observed on August 23, 24 and 25, 1927; April 7, 1930; and September 8, 1933.—WINTON WEYDEMEYER, *Fortine, Montana*.

Status of the Wood Pewee in Middle Florida.—My limited experience with the Wood Pewee (*Myiochanes virens*) in Florida is somewhat different from that of A. H. Howell as given in his 'Florida Bird Life,' I have never found it breeding in high lands but always in pine sapling groves or in short-leaved pines growing in low grounds near large swamps.

On June 26, 1930, about three miles south of Lake Mary, Seminole County, I found a single male among short-leaved pines and oaks near a deep swamp and watched it for several hours in the hope of discovering its nest but was unsuccessful. It sang from the tops of the trees moving from place to place. The female was never seen. In May or June, 1930, I found another male east of Fort Christmas, Orange County, acting in the same way and again I failed to find either female or nest. In a dense pine sapling thicket near the big swamp at Samsula, Volusia County, J. C. Howell Jr. heard one singing early in June, 1932. The spot was visited by myself and others on June 17, 19 and 25, and two singing birds were located while on the last occasion an old nest was found on a pine limb eight feet out from the trunk.

In Duval County the bird is a regular breeder and according to S. A. Grimes, who has found a number of nests, it occupies higher ground in oak and pine woods.—DONALD J. NICHOLSON, *Orlando, Fla.*

Breeding of the Prairie Horned Lark at Lexington, Virginia.—Since 1930 I have seen an occasional pair of Prairie Horned Larks (*Otocoris alpestris praticola*) in the neighborhood of Lexington, Virginia, during the breeding season, but have not been able to find a nest until this season, when I located four. On April 16, 1934, Robert P. Carroll and I visited a nest on the Tribrook Golf Course, two miles south of Lexington, with four downy young. The golfer who had discovered the nest told us that the eggs had hatched on April 14. Something took the young birds a few days later. On April 20 John H. Grey and I found a nest two miles north of Lexington in a closely cropped pasture. It had three grown young which safely left the nest on the following day. On April 23 I saw a third nest on the Tribrook Course which contained two young about ready to leave. The caretaker tells me of a fourth nest on the same links, the young of which had left the nest about April 18. Two of these nests were in the fairway, one in the rough. In no case did the adults manifest any special concern at our presence. These nests are considerably farther south than any previous record for the Valley of Virginia, and there is only one record (Lynchburg, Virginia) farther south on the Atlantic slope.—J. J. MURRAY, *Lexington, Virginia*.

Singing of the Tree Swallow in New Hampshire.—In connection

with Mr. Weydemeyer's record of the singing of the Tree Swallow (*Iridoprocne bicolor*) in Montana, I might add data on a bird in New Hampshire which selected for its singing tree a dead elm branch some forty-five feet high and near where he and his mate nested in both 1932 and 1933. He was not known to sing elsewhere. The force of his song was sufficient, with the active side-to-side swinging of the head, to cause the whole body to vibrate sidewise, the head held slightly forward and erect. In both years his singing started only after nest-selection was made and continued irregularly each day until the eggs hatched, after which it was rarely heard, and then occasionally in the afternoon after the heat of the day. The tone and pitch and extent of phrasing of song and the bird's actions never varied, except for a *tee-whit* sometimes added after an interval at the ending of a song. Corresponding with Mr. Weydemeyer's note, this male sometimes commenced singing before daylight, and continued sporadically all forenoon, not a song preference period but depending on the heat. I record this song as a hurried rendition: "*Tee-vut, tee-vut, tee-vut, tee-vut*,—(breathing space)—*tee-vut, tee-vut, tee-vut, tee-vut*, sometimes followed by one phrase of the purling Swallow call-note. This song compares very closely to the *Te-ver* and *eve-t-ver* of the Montana birds.

Mr. Weydemeyer speaks of: "One unvarying and pleasing phrase of gurgling notes is frequently interpolated between other notes by the male Swallows throughout the season; it is occasionally given by the females, especially when mating occurs." At variance with this I record this phrase (mating-song) as being given by the male Swallow when mating occurs, as the vocal tones correspond with the activity and arc of the male's fluttered flight. I have never seen a mating take place that this mating-song was not an accompaniment, in a period of eight years' observations.—LEWIS O. SHELLEY, *East Westmoreland, N. H.*

The Fish Crow in the Valley of Virginia.—Since 1928 I have occasionally heard Crows in the winter about Lexington, Virginia, which I thought were Fish Crows (*Corvus ossifragus*). Not being particularly familiar with this bird I have hesitated to report it at a point so far inland. Robert Ridgway found it common at Charlottesville, Virginia, in 1882 (Bull. Nutt. Orn. Club, VII, 4, 250); Ludlow Griscom writes me that he saw one at the same place, June 24, 1915; and A. L. Pickens has reported it "among the mountain valleys in Virginia" (The Auk, XLV, 1, 67). Having recently had an opportunity to hear *C. brachyrhynchos* and *C. ossifragus* together along the Potomac and then on the following day to hear the bird in question at Lexington I am now positive that my identification is correct. These birds occur here sparingly but regularly from January to mid-April, at the time when the note is of most diagnostic value, with a few late November and December records. Since it is mainly in town that I have heard the birds I have not been able to shoot one.—J. J. MURRAY, *Lexington, Virginia*.

Mockingbird in Summer and Winter in Southwestern Pennsylvania.—During the summer of 1933, two pairs of Mockingbirds (*Mimus p. polyglottos*) built their nests at the farm of my son-in-law, Miner Cole, twelve miles southwest of Waynesburg, Greene County, Pennsylvania. Their efforts were very discouraging as three of their four nests were deserted. In one instance the nest with its four eggs was so close to a public road and passing automobiles that the sitting bird was continually frightened away. The birds rebuilt in a new place away from the road and this time succeeded in hatching three young.

The first effort of the other pair was broken up, probably by a snake which was seen in the hedge near the nest. In their second effort a severe wind and rain storm was supposed to be the cause of the desertion of the nest and its four eggs. After this failure, the birds stayed in the vicinity but did not nest.

Every year I either see or hear of Mockingbirds nesting here and there in Greene County, but usually at a different location each year. The following incident may explain this irregularity.

My son-in-law has just told me that on January 30, 1934, he found a Mockingbird seeking shelter in a brush-heap on top of a stone pile. The bird seemed much affected by the cold and he planned to capture it and keep it indoors until springtime. Twice he had his hands upon the bird but it finally eluded him and flew over a hill where he failed to re-locate it.

While this section is gradually losing the old-time winters of long drawn out severity, we have had this present season four short periods of zero weather with snow: once about the middle of November last, twice in December and once in January—the three or four days just past.

Since the Mockingbird is never an extensive migrant, it is possible that many of the birds that summer in my section, are non-migrants and die during the winter, thus accounting for the birds being found nesting in a certain place one year and being entirely lacking there the next.—J. WARREN JACOBS, Waynesburg, Pa.

The Starling and Mountain Bluebird in Kansas.—On a farm near Wellington, Kansas, where one European Starling was found dead following a storm March 4, 1933, the birds have returned this year and are seen almost daily. On December 6, 1933, eight were seen with several Meadowlarks along a hedge fence. Since February 11, 1934, Starlings in numbers of two to fifty or more have been about the farm. The largest flock was observed following cattle on wheat pasture. The smaller numbers are nearly always with Meadowlarks and come in around the buildings and feed-lots. In their association with the livestock the birds are losing much of their former wildness. The Starlings seem to prefer the company of the Larks to that of a large flock of Red-winged Blackbirds which has been about the place for sometime.

Another rare visitor this winter is the Mountain Bluebird (*Sialia curruoides*). Early in February a single bird was at the farm house about

dusk for several evenings. Since then as many as a dozen have been seen early in the morning about the cedars in the yard where they probably spend the night. The recorded dates are February 9, 14, 20, and 22, 1934, at the farm. The birds have also been observed in the park and in the cemetery in town. There were about one hundred birds in the flock in the cemetery. There are a great many conifers in the cemetery which likely provide shelter and perhaps some food for them.—FRANK M. ALEXANDER, *Wellington, Kansas*.

Wilson's Warbler in Georgia.—On April 25, 1931, while out in a swamp on Brier Creek I was very much elated and surprised to see a Wilson's Warbler (*Wilsonia pusilla pusilla*). The bird was on the ground in plain view and though I approached within ten feet of him he was not frightened and continued to sit there. At last he flew to a nearby shrub and again I approached very near. This time I wrote a description of him as I did not have a gun to secure this rare visitor.—BERNARD H. STEVENSON, *Waynesboro, Ga.*

Iris Color in the Boat-tailed Grackle (*Cassidix mexicanus* subspecies).—These birds were not numerous on the Chenier au Tigre, Louisiana, this spring but several flocks composed of males, mostly, were observed daily. At the request of Dr. Francis Harper, I collected a few specimens and found that the eyes were greyish brown in males in first year and in full adult plumage. Females were not collected, but those observed with glasses seemed to have eyes of brown.—A. M. BAILEY, *Chicago Acad. of Sciences*.

Color of Iris in the Boat-tailed Grackle (*Cassidix mexicanus* major).—The comments in 'The Auk' caused me to make special investigations on the color of the iris of the Boat-tailed Grackle. I annually band quite a lot of these birds, and there are great numbers of them nesting in various localities about my place and as they are quite tame, the iris can easily be examined without killing them. When handling Boat-tails for banding in late March, 1934, I noticed that all of the males around the trap, although in full breeding plumage, had yellow eyes, but when in the trap and badly frightened, their eyes were brown. In late April I made a more careful investigation.

With my glasses I watched the birds around the nests, go through the courting antics, and at such times, when excited and making plumage display to attract the females, the iris is contracted to only a very small black point, and the balance of the eye is a brilliant golden yellow. When these same birds relax, the pupil expands and the iris is then partly brown or a dull golden brown, except the outside rim, which remains bright gold. These same birds when taken in the trap or observed through the glasses at a distance of fifty feet, have the iris brown, with the exception of the golden ring, but when taken in the hand, or when they are being caught, all of the yellow disappears and the iris is then brown. I made this test on

more than 20 birds on three different days, using fresh birds each day, and in every case, the iris change was noted as above.

This fact may cause those who are dividing the Boat-tail Grackles into sub-species on account of the color of the eyes to make some further investigation. Personally, I have come to the conclusion that there is nothing in the color of the iris to warrant a sub-specific division.—E. A. McILHENNY, *Avery Island. La.*

Nesting of Boat-tailed Grackle and Blue-winged Teal in Delaware.

—I saw a single Boat-tail Grackle (*Cassidix mexicanus major*) near here in 1930 and last year (1933) found a pair near Cedar Beach on April 29, while on May 5 I found four pairs and a nest containing three eggs. It was built of coarse marsh grasses lined with finer grass, nine inches by seven with the cavity four by five and a half inches. It was situated in a cedar tree about twelve feet up. On June 18, 1933, I saw three groups of young, one of four and the others three. In the spring of 1934 these Grackles again nested.

I found a nest of the Blue-winged Teal (*Querquedula discors*) on May 11, 1933, in a fairly dry marsh near the Bay, with eight eggs. The male kept flying around and whistling but the female did not flush until I was within ten feet of the nest. In May, 1934, another nest with eggs was found by a visiting ornithologist.—HERBERT BUCKALEW, *Milford, Del.*

Purple Grackle Wintering at Newport, R. I.—On January 4, 1934, I watched an apparently uninjured Purple Grackle (*Quiscalus quiscula quiscula*) in my small garden in Newport, R. I., where it had remained through the early winter. The below zero weather seems to have had a very weakening effect on the bird and since then he has had great difficulty in flying. While Bronzed Grackles remain late in the autumn I have never before found a Purple Grackle in winter.—A. O'D. TAYLOR, *Powel Ave., Newport, R. I.*

Further Occurrence of the Bronzed Grackle in Northwestern Montana.—In 'The Auk' for April, 1932, the writer recorded the first known occurrences of the Bronzed Grackle (*Quiscalus quiscula aeneus*) west of the continental divide in Montana: two birds having been seen on June 22, 1927, and one on April 22 and 23, 1929, at Fortine.

Since that time these additional records have been obtained by the writer in the same locality: one bird was observed May 8 and 10, 1933; and two were noted October 2, 1933.—WINTON WEYDEMEYER, *Fortine, Montana.*

Cowbird Notes from Tennessee.—At Radnor Lake, near Nashville, Tennessee, on July 9, 1933, Harry C. Monk and the writer located a unique nest of the Carolina Wren (*Thryothorus l. ludovicianus*). The brooding bird was flushed disclosing four eggs, three of the owner and one of the Eastern Cowbird (*Molothrus a. ater*). It is noted that Dr. Fried-

mann, in 'The Cowbirds,' lists this Wren as "a very uncommon victim" of the Cowbird.

In this, the only instance the writer has recorded, the location of the nest was unusual, and easy of access to the Cowbird. The almost perfect globe of green moss was set in a three-point fork in the main stem of a small American elm, about eight feet from the ground. Except for a partially concealing cluster of poison ivy leaves, the nest was quite conspicuous. It would be interesting to know whether other records of the victimizing of the Carolina Wren have occurred in abnormally placed nests only, or whether the Cowbird occasionally seeks out the usually well-hidden normal nest situation.

The date given above for the Cowbird's egg is the latest of which the writer can find record for the Nashville region, the next latest being May 30, 1920 (Harry C. Monk). The Cowbird's egg and two of those of the Wren contained small embryos. The third Wren's egg had a small hole chipped in the shell and the contents were decomposed.

On July 29, Dr. J. M. Shaver and the writer noted a flock of about 100 Cowbirds in which, according to the writer's notes, "the females and immatures outnumbered the males four or five to one." Evidently very little nesting takes place as late as the date recorded above, since the young in the above mentioned flock were all well grown.—COMPTON CROOK, Boone Training School, Boone, North Carolina.

A Summary of Cowbird Host Species in Ohio.—Since 1918, the writer has kept a nearly complete count of all bird nests located and brief notes on those containing eggs or young of the Eastern Cowbird (*Molothrus ater ater*). During parts of eight summers spent in Ashtabula County, northeastern Ohio, nearly 5000 nests were located. About 2740 others were found in Franklin County, central Ohio, about 2435 in Knox County, north-central Ohio, and about 3320 elsewhere in the state. These totals are increased by several colony nesting species which are not parasitized by the Cowbird. Also many were of bank, cavity or tree-top nesting species, the nests of which could not be fully examined. The number of parasitized nests depended to some extent upon the nature of the field work being done at the time, but for the most part upon the abundance of Cowbirds, the abundance of the host species, the ease with which the nests were located, and the extent to which each species was parasitized in the region. Most of the nests were examined but once, so many of them may have been parasitized after finding, or Cowbird eggs or young may have been destroyed before the finding of the nest.

A total of 42 species served as hosts. In the list below those known to have been actually successful in raising young Cowbirds in at least one instance, have been starred. Dr. Herbert Friedmann writes that the record of the Henslow's Sparrow is the first reported for the western race. All hosts were of the order Passeriformes except the Mourning Dove. No Swallows, Titmice, Woodpeckers, Wrens, Waxwings, Catbirds, or Robins,

served as hosts, so far as is known. About 15% of the parasitized nests were of Vireos, 24% of Warblers, and 51% of Sparrows. The Song Sparrow ranked first as host, furnishing 22% of all of the parasitized nests found; the Red-eyed Vireo, 14%, Yellow Warbler, 10%, Chipping Sparrow, 10% and Ovenbird, 7%. In the table below only the vernacular names as used in the 1931 A. O. U. 'Check-List' are given. The number of parasitized nests of each species from each locality is listed. Also after the important host species, the percentage of nests parasitized is given, and in parentheses the number of nests on which this figure is based.

Eastern Mourning Dove.....	1	*Bobolink—5% (184).....	10
*Eastern Phoebe.....	7	Eastern Red-wing.....	1
Acadian Flycatcher.....	1	Baltimore Oriole.....	1
*Alder Flycatcher—21% (108)...	23	Orchard Oriole.....	1
*Wood Thrush.....	6	Scarlet Tanager.....	1
White-eyed Vireo.....	1	*Eastern Cardinal.....	4
Yellow-throated Vireo.....	1	Rose-breasted Grosbeak.....	1
*Red-eyed Vireo—36% (231)....	84	*Indigo Bunting—40% (43)....	17
*Eastern Warbling Vireo.....	3	Dickcissel.....	1
Black and White Warbler.....	1	*Red-eyed Towhee—21% (103) ..	22
Prothonotary Warbler.....	1	Eastern Savannah Sparrow....	1
*Blue-winged Warbler.....	3	*Eastern Grasshopper Sparrow..	1
*Eastern Yellow Warbler—42% (146).....	62	Western Henslow's Sparrow....	1
*Chestnut-sided Warbler—33% (12).....	4	*Eastern Vesper Sparrow—8% (112).....	9
Northern Prairie Warbler.....	1	Slate-colored Junco.....	1
*Ovenbird—36% (112).....	41	*Eastern Chipping Sparrow—53% (115).....	60
Louisiana Water-Thrush.....	1	*Eastern Field Sparrow—31% (159).....	51
*Kentucky Warbler.....	1	Swamp Sparrow.....	1
*Northern Yellow-throat—41% (41).....	19	*Mississippi Song Sparrow—34% (398).....	135
Yellow-breasted Chat.....	2	Number of parasitized nests..	169
Hooded Warbler.....	1	Number of species parasitized..	41
*American Redstart—33% (22)..	7	Number of species raising young Cowbirds.....	20

—LAWRENCE E. HICKS, *Department of Botany, Ohio State University, Columbus, Ohio.*

Juvenal Eastern Evening Grosbeaks (*Hesperiphona v. vespertina*). at Sault St. Marie, Michigan.—Eastern Evening Grosbeaks are at my feeding and trapping station every year. Usually the birds arrive in October or early November and stay until towards the end of May, only in one year, 1924, did any number stay around through June. The flock is largest from end of February to May 1. Usually a few come in irregularly in sum-

mer, and in eight years out of the past thirteen some of them were young of the year, i. e. in juvenal plumage. My records show the dates for young first seen as follows:

1921—Aug. 24, 1923—Aug. 19, 1924—Aug. 18,
1925—July 29, 1929—July 28, 1931—Aug. 17,
1932—July 24, 1933—July 7.

The summer of 1933 was unusually hot and dry, and many birds nested earlier than usual, which probably accounts for young Grosbeaks coming in so early. This is the first summer the Grosbeaks have stayed regularly and from July 7 to October 8, I banded 37, 26 of them being young of the year—13 males and 13 females, and the first to come in were still being fed now and then by the old birds. As they were in and out of a window box almost daily I had an excellent opportunity to watch them as they molted from juvenal into first winter plumage.

I have been much surprised to find that in bird-book after bird-book, if any mention at all is made of the juvenal plumage, it is one of the following statements:—

"The Sexes are alike." "The sexes are similar." or "Similar to adult female."

There is a distinct difference in the juvenal plumage of the male and female and there is not the least trouble in picking out the males from the females at sight. Furthermore, it is often stated that the young males in first winter plumage are like the adult females, which is also an error since both sexes molt into the respective adult plumages directly from the juvenal at the end of the first summer. There may be a slight difference in this first adult plumage from that of subsequent years as this first molt is confined to the body plumage and does not involve the flight feathers this being the case with most Passerine birds. Mr. Donald W. Douglass of the University Museum at Ann Arbor, Mich., at the request of Dr. Josselyn Van Tyne, to whom I sent two juvenal male Grosbeaks, has kindly drawn up a detailed description as well as a description of a juvenal female. His description follows:

"A line at base of upper mandible, including lores, black; sides of forehead and a line over eye, old gold; central forehead, crown, occiput, and auriculars olive-brown. Nape and upper back yellowish-olive, the feathers whitish basally along the white shafts. Lower back, rump, and anterior upper tail coverts grayish, the feathers tipped with dull yellow. Posterior upper tail coverts black, tipped with dull yellow.

"These young males tend to have a white tip to the black tail. However, this does not extend to the whole web but is confined to the inner webs. The white tipping is more strongly developed on the outer than on the inner feathers. The unbanded specimen (probably just individual variation) has the white tipping reduced, the white is entirely gone from the inner feathers of the tail but still persists in the outer feathers.

"Area at base of lower mandible extending upward to lore and backward along sides of chin, neck, and upper breast to folded wing, old gold, brightening posteriorly. Remainder of chin, breast, and belly light brownish olive; under tail coverts whitish.

"Primaries black, narrowly edged with white. First secondary black, with mere edging of white at tip; second black, broadly tipped with white; remainder of secondaries chiefly whitish with yellow edgings, forming a conspicuous white wing-patch; last three "tertials" with inner dusky edgings. Wing-coverts, except those of the inner secondaries, black, some of the lesser coverts margined with yellow. Coverts of the inner secondaries black, broadly tipped with white, the white tips margined with yellow. Bend of wing yellow; lining of wings chiefly lemon yellow.

"Bill (of banded specimen) blackish on upper mandible, chiefly dull horn-color on lower. Bill of other specimen somewhat lighter.

"Wing: banded specimen 110 mm., other 116 mm.

"An immature female Evening Grosbeak taken by Wood and Hastings at Isle Royale, August 23, 1929, is clearly distinguished from Mr. Magee's two male specimens, showing more extensive white markings in the tail-tips, and white banding on the inner primaries, while lacking the extensive white on the inner secondaries that forms the conspicuous white patch in the wing of the male. This female is duller than the young males in general body color."

Regarding the east and west movement of my banded Grosbeaks the spread is now 1350 miles, as one taken in November, 1932, at Newdale in Western Manitoba was reported to the Biological Survey this year, making my most westerly record; the most easterly record still stands at 25 miles east of Quebec.

I have one of the original Audubon plates, made in 1838, showing two Evening Grosbeaks; one marked female, the other young male. I believe the young one was not a male but a female.

For many years there were few, if any, young Evening Grosbeaks in any collection and I believe many writers took their cue from Audubon. I have banded hundreds of males and have yet to find one that even remotely resembles the Audubon young male in the markings of upper tail coverts, wing or tail.—M. J. MAGEE, *Sault Ste. Marie, Michigan*.

Western Henslow's Sparrow Wintering in Indiana.—While taking a bird census on December 25, 1933, at Houston, Jackson County, Indiana, I was fortunate to see and collect a specimen of the Western Henslow's Sparrow (*Passerherbulus henslowi henslowi*) which seems to constitute the first winter record for the state. The specimen was identified by Mr. Amos W. Butler, in whose collection it now is, and the identification later confirmed by the U. S. Biological Survey. Milton B. Trautman reports a specimen from Union County, Ohio, December 16, 1932, which is slightly farther north than mine.—RAYMOND J. FLEETWOOD, *Kurtz, Indiana*.

Extension of Breeding Range of the Cape Sable Seaside Sparrow (*Ammodramus mirabilis*).—This little-known Sparrow was discovered by Arthur H. Howell, in February, 1918, on a brackish prairie, about half a mile back from the shore of the Gulf of Mexico, near Cape Sable, Florida. A few specimens were obtained then and later, in April, 1926, twelve were secured for the Biological Survey Collection.

On May 3, 1928, while walking through an extensive savanna or prairie in Collier County lying between pine forests and an extensive cypress swamp, I found a singing male Seaside Sparrow which I took to be this species and it is so recorded in Mr. Howell's 'Florida Bird Life.' The protracted drought had made the savanna dry as powder and dust could be kicked up anywhere. The spot is situated about six miles northeast of Pinerest and is possibly three miles square. It was visited again by Mr. J. C. Howell, Jr., and myself on April 21, 1932, when we found possibly fifteen or twenty pairs of the birds within half a mile. The males were singing vigorously and one bird was carrying a worm probably for its young. We searched about an hour for nests but failed to find any and I am inclined to think that instead of building in clumps of grass, as do the east coast Seaside Sparrows, these birds must nest directly on the ground. One bird flushed quite close to me and I could distinguish its greenish colored back but not having a gun it was impossible to make identification positive. There had been little rain and the savanna was very dry but not so noticeably as in 1928.

I feel convinced that a search of the marshes at the head of Shark River as well as in the neighborhood of Everglade, Collier County, would reveal colonies of these birds as both regions seem exactly suited to their needs.—
DONALD J. NICHOLSON, *Orlando, Fla.*

Notes on the Nesting of the Slate-colored Junco.—During the summer of 1933 the writer had under observation three nests of the Slate-colored Junco (*Junco hyemalis hyemalis*), which were located in the Alleghany State Park (Quaker Bridge, N. Y.) in the vicinity of the Alleghany School of Natural History. All three nests were located in holes on generally north-facing slopes, two to ten feet from the bottoms of the slopes. All three nests were constructed largely of grasses, one of them having a dual entrance, the front of the hole in which the nest was located being screened by matted grass.

The nest which was studied in greatest detail was located in a bank flanking a well-traveled highway, but the birds appeared to be little disturbed by the traffic. The eggs were laid June 30 to July 3; they hatched on July 13 and 14; and the young left the nest July 26. There were four eggs laid, all of the young growing to maturity.

Both the male and female fed the young, but the male fed 60 times to the female's 49 during the periods of observation, which totaled fourteen and one-half hours. The average frequency of feeding was about eight times per hour. When feeding the parents never flew directly to the nest,

but first alighted in the trees above the nest, then flew to the base of the bank on one side or the other of the nest, and then hopped to it. The young were evidently stimulated to open their mouths by tactual stimuli. Insect larvae and pupae appeared to compose as much as 90% of the food for the young, much of the remainder being moths.

The male removed 27 fecal sacs to the female's 14 during the periods of observation. In all cases where the disposition of the sacs was noted they were wiped off on tree branches. The brooding was apparently all done by the female, and she was not observed brooding after the young were seven days old.

With a single exception, the birds were not heard singing. The alarm note was infrequently used. When the female was on the nest and the male arrived with food she would give three musical chirps and leave. The young did not make any sounds until they were ten days old, when they began making their peculiar hissing-chirp. The female was more excitable than the male, but both adults were remarkably calm. A passing car would disturb them only momentarily if at all.

When the young were seven days old their appearance changed radically, due to the opening of their eyes and the unsheathing of their feathers. After they were eight days old they became very restless; at various times they jostled about so much that one or the other almost fell from the nest. I hoped that I should be able to observe them leaving the nest, but this event occurred while I was gone, between 8:00 and 9:15 A. M. on July 26, when they were twelve days old.—VICTOR A. GREULACH, *Muskingum College, New Concord, Ohio.*

Some 1933 Records from Berkshire County, Massachusetts.—*Casmerodius albus egretta*. AMERICAN EGRET.—In so far as our records show, but one Egret had been seen in Berkshire County previous to 1933. This was in 1930. From July 24, 1933, when the first Egrets were seen, at Cheshire Reservoir, to September 25, when the last one was observed, in Pittsfield, Egrets were actually quite common. The largest number seen in one day totaled fourteen.

Clangula hyemalis. OLD SQUAW.—Stanley Clarke and I saw a male well out in Onota Lake, Pittsfield, on October 29. This is our first Twentieth Century record.

Melanitta deglandi. WHITE-WINGED SCOTER.—On the night of December 28, with the temperature about five below zero, Mr. and Mrs. Augustus McK. Gifford found a male in the snow on Commonwealth Ave., Pittsfield. Our lakes had been frozen over for nearly a month.

Arenaria interpres morinella. RUDDY TURNSTONE.—On May 28, in Pittsfield, I identified a male from a distance of less than twenty feet. This is the second record for the county.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER.—Two were found at Onota Lake on October 26. This is the first definite record for the Berkshires.

Larus philadelphia. BONAPARTE'S GULL.—Stanley Clarke observed two at Onota on September 9. This is the first record since 1902.

Picoides tridactylus bacatus. AMERICAN THREE-TOED WOODPECKER.—Henry A. LaBeau observed one in North Adams on October 3, an unusually early date. He had an excellent view from a distance of about fifteen feet.

Iridoprocne bicolor. TREE SWALLOW.—I saw and heard one in Lanesboro on October 12. This date, which is more than a month late, is all the more unusual when it is realized that September was a cold, rainy month.

Stelgidopteryx ruficollis serripennis. ROUGH-WINGED SWALLOW.—Gerald Cole found three pairs nesting in Williamstown and this species was frequently noted in Pittsfield.

Progne subis subis. PURPLE MARTIN.—No record for the year.

Dendroica cerulea. CERULEAN WARBLER.—H. A. LaBeau observed one in the lower branches of an elm tree in North Adams on May 21.

Carduelis carduelis. EUROPEAN GOLDFINCH.—William J. Cartwright, an experienced observer, found one in a flock of Juncos and American Goldfinches in Williamstown on October 21. This is a new record for the county.—G. BARTLETT HENDRICKS, *Berkshire Museum, Pittsfield, Mass.*

Notes from Cheshire County and Coastal New Hampshire.—Reference to published sources in the following notes are: Forbush's 'Birds of Massachusetts and Other New England States,' and to the 'Bulletin of the Audubon Society of New Hampshire.' I am indebted to the persons named for the privilege of publishing these notes.

Rallus c. crepitans. CLAPPER RAIL.—About September 9, 1933, one seen at the southeastern end of Eel Pond (off Rye Harbor), as I am informed by Mr. Drake, hotel proprietor of Rye.

Arquatella m. maritima. PURPLE SANDPIPER.—Forbush (Vol. 1, p. 405) classes this species as a "winter visitor coastwise." Francis Beach White (N. H. Audubon Bulletin, Vols. IX, p. 3, X, p. 30, and XI, pp. 7 and 32) proves it to be a rather common spring migrant. L. R. Nelson on May 1, 1933, I believe took the first spring specimens.

Petrochelidon l. lunifrons. CLIFF SWALLOW.—Late migration dates for this species are September 11 and 12, 1933, when I saw small flights working down the coast from Great Bay to Seabrook, becoming the more common the afternoon of the 12th.

Hirundo erythrogaster. BARN SWALLOW.—Since Forbush gives (Vol. 3, p. 149) as the latest dates for this species in Massachusetts November 1, 2 and 4, the fact that Game Warden L. M. Hill saw a flight of them at Rye on November 5, 1932 is of interest.

According to Dr. Harry C. Oberholser the migration files of the Biological Survey contain no later date than this for the four northern New England states.

Dendroica p. palmarum. PALM WARBLER.—I saw an individual here April 25, 1933, apparently the third spring record for the state.

Sturnella m. magna. MEADOWLARK.—Aside from the bird that wintered here in 1931-1932 (Auk, 1932, p. 266) two other county records are of single birds that spent the winters of 1931-1932 and 1932-1933 at the Country Club grounds, Winchester.

Bombycilla cedrorum. CEDAR WAXWING.—Two late nesting dates for this species have come to my notice. The first nest was in the top of an eight-foot alder, contained three eggs, two of which hatched August 16, and the young left the nest August 31. The second nest, four feet from the ground in a nearby alder, was found by Donald Jenkins, August 31, when it contained an addled egg and a two-day-old youngster, the latter left the nest September 13. The nest-period at both nests was fifteen days. The nestling at the second nest at an early age was fed to some extent on the fruits of hawthorn and these were semi-digested in the throat passage.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—On January 4, 1934, I banded a male caught in a barn where it had been in the habit of feeding on hay chaff. My second winter record.—LEWIS O. SHELLEY, East Westmoreland, N. H.

Some Recent Records from the Niagara Frontier, New York.—

The following observations were made in the vicinity of Buffalo, New York, during the past six months. The unusually severe winter doubtless accounts for some of the records.

Morus bassana. GANNET.—In company with several members of the Buffalo Ornithological Society, an immature bird of this species was observed on the Niagara river, near the Peace bridge, on October 29, 1933, by the writer. This is the second record for this region, one specimen having been taken in Ontario at Wainfleet in November, 1907 (Auk, July 1908, p. 309).

Chaulelasmus streperus. GADWALL.—This species has been considered a very rare migrant here. During the past three winters, 1931-32, 1932-33, 1933-34 two or three individuals have, from time to time, been observed in company with the several hundred Black Ducks and Mallards that spend the winter near Goat Island on the Niagara river.

Mareca penelope. EUROPEAN WIDGEON.—A male of this species was observed on a flooded meadow in the town of Clarence, N. Y., on March 29, 1934, by Mrs. T. M. Kelly, Mrs. L. Mansfield and Robert Mansfield, and upon the day following at the same location by several other observers. Another male was observed in Buffalo Harbour on April 15, 1934, by Mr. James Savage. Migration dates for this species in the vicinity of Buffalo have ranged between March 19 and April 23, in recent years.

Histrionicus histrionicus histrionicus. EASTERN HARLEQUIN DUCK.—Three female, or immature, individuals of this species were identified by Roger Peretson and the writer on December 23, 1933, on the Niagara River, in the Canadian Rapids above the Niagara Falls. For a time they were seen on the rocks off Goat Island where observations of their size shape and markings could easily be made. The same birds were seen the

next day at the same place by Messrs. Peterson, Clarence Beal, and James Savage. Doubtless these were the same three birds of this species reported at the same location by Messrs. E. C. Ulrich and A. D. Wander on December 3, 1933; probably the report of Mr. Thomas L. Bourne from the same location on January 18, 1934, was of the identical three birds.

Larus hyperboreus. GLAUCOUS GULL.—While individuals of this species are present on Lake Erie and the Niagara River nearly every winter, they have been much more numerous during this winter, 1933-34. A female in first year plumage was collected by the writer at Buffalo, N. Y., on March 25, 1934.

Larus leucopterus. ICELAND GULL.—This species has been more numerous than usual in this vicinity during the winter of 1933-34.

Larus marinus. GREAT BLACK-BACKED GULL.—During the past winter as many as nine individuals of this species have been seen in one day on the Niagara River between Niagara Falls and Buffalo. During a normal winter an observer is fortunate if able to report one or two individuals in this vicinity during the entire season.

Larus kumlieni. KUMLIEN'S GULL.—An individual of this species, very light in color, much like an Iceland Gull, but with the distinct gray markings near the end of the primaries, was observed at close range by Roger Peterson, and the writer, at the Ferry landing, foot of Ferry Street, Buffalo, N. Y., on December 23, 1933. During February 1934, there were several reports of at least one other individual of this species of much darker general coloration; and on March 25, 1934, the writer collected a male of this description on the Canal, paralleling the Niagara river, at Buffalo, N. Y. The mantle was fully as dark as that of the Herring Gull. Measurements were length 23 inches, wing $15\frac{3}{4}$ inches, tarsus 2 inches, bill $1\frac{3}{4}$ inches, depth bill at base .68 inches. Coloration of the bill was similar to that of the adult Iceland Gull.

Tyto alba pratincola. BARN OWL.—A nest of this species was located on Grand Island by Mr. E. C. Ulrich on September 17, 1933. Four young, nearly full grown, were found. Three of the young birds were banded by Mr. W. A. Davis and the writer on September 19, 1933. On September 23, 1933 they were still at the nest. Two individuals of this species spent most of the past winter in a small woods adjacent to Lincoln Park in the town of Tonawanda, N. Y.—HAROLD D. MITCHELL, 46 Jewett Parkway, Buffalo, N. Y.

Additional Notes on Birds of Princess Anne Co., Virginia.—

Seiurus aurocapillus. OVEN-BIRD.—One male was seen each day from May 18 to 20 at the edge of a stretch of rather thick woods near Pungo. It could be heard singing at frequent intervals throughout the day, and judging from its actions it seemed to be a breeding bird.

Geothlypis trichas trichas. MARYLAND YELLOW-THROAT.—This was a characteristic bird of the thickets and underbrush near Pungo. Specimens taken proved to be *trichas*, so this locality apparently marks about the

southern limit of this race on the coast. *Geothlypis trichas typhicola*, recently described by the junior author,¹ occurs on the North Carolina coast within a few miles of the Virginia line and in the Dismal Swamp, which lies approximately twenty miles due west of Pungo.

Pipilo erythrophthalmus canaster. ALABAMA TOWHEE.—This species was plentiful here, and frequently seen about thickets and underbrush. Specimens taken were in some respects intermediate between *erythrophthalmus* and *canaster*, but were sufficiently characteristic of *canaster* to be referable to this race. Heretofore this form has not been recorded north of Beaufort, North Carolina.

Passerherbulus henslowi susurrans. EASTERN HENSLow's SPARROW.—A small colony of these birds, apparently breeding, was found in the same area on the beach where the Short-billed Marsh Wrens were seen. The two days that they were observed males were frequently heard singing, and there is little question but that they were nesting here. In fact the species was reported as breeding in this county by H. H. Bailey in his 'Birds of Virginia' but this record seems to have been overlooked in the preparation of the fourth edition of the A. O. U. Check-List (1931), where the subspecies is said to range "south to northern Virginia."

Melospiza melodia atlantica. ATLANTIC SONG SPARROW.—This little known race was fairly plentiful about clumps of myrtle bushes growing among the low dunes on the ocean beach a few rods from the water's edge. Here these birds were inconspicuous and very shy, this shyness being evident when an attempt was made to approach one. The song uttered by the males sounded weak, and was not audible at any great distance, but this was possibly due to the strong northeast wind that blew each day, and to the noise of the surf. The few females that were observed were apparently incubating at this time for there was no evidence of their feeding young. With one exception Song Sparrows were totally wanting away from the beach; one pair was found at the edge of a large marsh about five miles inland.—ARTHUR H. HOWELL AND THOS. D. BURLEIGH, *Bureau of Biological Survey, Washington, D. C.*

Northern and Southern Birds Meeting on a West Virginia Mountain.—Along the southern border of Randolph County, West Virginia, lies the range of Cheat Mountains, the altitude of the various peaks running from thirty-seven to forty-three hundred feet. These mountains are notable as a meeting place of northern and southern birds. To some extent the plant kingdom carries out the same mingling of forms.

In listing the birds, I have divided them into those typically found in the Canadian or Upper Transition life zones, and those more typical of the Carolinian zone. Frequent visits over a ten-year period have turned up a number of surprises.

¹ Proc. Biol. Soc. Washington, vol. 47, p. 21. 1934.

Canadian Forms.

Sphyrapicus varius varius. YELLOW-BELLIED SAPSUCKER.—A common bird in the nesting season.

Nuttallornis mesoleucus. OLIVE-SIDED FLYCATCHER.—Seen occasionally along the borders of some mountain swamps, where the altitude drops to 3,700 feet.

Penthestes atricapillus atricapillus. BLACK-CAPPED CHICKADEE.—The common Chickadee, but mingling with the Carolina Chickadee (*P. carolinensis*). The two-note song of the Black-cap, seems absolutely determinative when compared with the constant four-note song of the Carolina.

Sitta canadensis. RED-BREASTED NUTHATCH.—Common as a breeding bird.

Certhia familiaris americana. BROWN CREEPER.—Since these mountain-tops are within the red spruce belt, Brown Creepers occur in considerable numbers.

Nannus hiemalis hiemalis. EASTERN WINTER WREN.—The liquid notes of this tiny bird greet you from every shaded ravine along this range.

Hylocichla guttata fazoni. EASTERN HERMIT THRUSH.—This is the only place in West Virginia, so far as I know, where a full Hermit Thrush chorus may be heard in summer. The birds seem extraordinarily abundant.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.—Not so common as the last, but heard every season. Nests have been found.

Regulus satrapa satrapa. EASTERN GOLDEN-CROWNED KINGLET.—At times very abundant. Young birds seem to be in every tree in late July and August.

Oporornis philadelphia. MOURNING WARBLER.—Most of this mountain area has been cut over, and where the Millsbaugh's blackberries have grown up this Warbler is common.

Carpodacus purpureus purpureus. EASTERN PURPLE FINCH.—One of the real surprises of the region was to find dozens or even hundreds of these birds in this area during the summer. On June 10, 1933, I watched one carrying nesting material. They are regularly common to abundant.

In addition to the species named above, the Northern Raven, Northern Pileated Woodpecker, Mountain Solitary Vireo, Cairns' Warbler, Magnolia Warbler, Blackburnian Warbler, Northern Water-Thrush, Eastern Savannah Sparrow, and Carolina Junco are other Canadian representatives.

What seems much more surprising is to find so many typically Carolinian forms. Of the species listed below, not one was recorded from an altitude lower than 3,500 feet.

Carolinian Forms.

Centurus carolinus. RED-BELLIED WOODPECKER.—Seen on August 7, 1931, and June 10, 1933.

Thryomanes bewicki bewicki. BEWICK'S WREN.—Nests around the buildings at Cheat Bridge settlement.

Poliophtila caerulea caerulea. BLUE-GRAY GNATCATCHER.—In many places in the state I have seen these birds at high elevations, but nowhere else quite so near the 4,000 foot mark.

Helmitheros vermivorus. WORM-EATING WARBLER.—This is another Carolinian form that climbs the mountains in this state. A pair was observed in June, 1932, along Red-bridge Run, near one of the tops.

Oporornis formosa. KENTUCKY WARBLER.—One of these birds was heard and seen singing in the same thicket with a Mourning Warbler on June 10, 1933.

Wilsonia citrina. HOODED WARBLER.—Not uncommon in the deciduous borders but not found in the evergreen thickets.

Yellow-breasted Chats, and a stray Cardinal (seen in August, 1929) are other Carolinian forms. I know of no other region in the state with such a crossing-over of life-zone forms.—MAURICE BROOKS, *French Creek, W. Va.*

1933 Notes from Chapel Hill, N. C.—We believe that the following notes will be of more than local interest since they include some information supplementary to Pearson and Brimleys' 'Birds of North Carolina,' C. S. Brimley's 'Birds of Raleigh' and other publications from this and other parts of the state.

Egretta thula thula. SNOWY EGRET.—A single individual was observed at various times between July 15 and September 12 both on a small pond and the large lake and constitutes our first record. Inland records for this species seem to be very scarce up to the present time and we hope that its appearance here is indicative of a comeback on the part of this species similar to that which the American Egret has experienced during the past few years.

Phalacrocorax auritus auritus. DOUBLE-CRESTED CORMORANT. May 21 and November 5 (1 bird).

Glaucionetta clangula americana. AMERICAN GOLDEN-EYE. March 26 (1) and April 2 (small flock).

Larus argentatus smithsonianus. HERRING GULL. April 16 (flock of 200) and April 22 (1).

Sterna hirundo hirundo. COMMON TERN, October 15 (1).—These are our first local records for these coastwise species. The first two are probably regular inland transients, but, nevertheless, no other records from central North Carolina have come to our attention. The latter two species have been observed at Durham and Raleigh, and Durham respectively, and are probably to be looked upon as irregular stragglers. The Herring Gulls appeared following heavy rains.

Dendroica tigrina. CAPE MAY WARBLER.—This bird is ordinarily a rare transient this far east of the mountains, but a sizable flight was observed between October 15 and 25. The maples outside of the University zoology building were full of Cape Mays for several days, the birds ranging from extremely dull immatures to individuals with bright yellow rumps. Several specimens were taken.

Dendroica castanea. BAY-BREASTED WARBLER.—A full plumaged, singing male was observed May 11 and 12 at the same place, in fact in the same tree on both days (Odum). Brimley lists one spring record from Raleigh (May 5); other North Carolina spring records all come from the mountains and foothills.

Wilsonia pusilla pusilla. WILSON'S WARBLER.—A specimen was observed September 28 (Odum and Arnold Breckenridge); attempts to collect it failed. There seem to be no other fall records from the piedmont section.

Passerculus sandwichensis savanna. EASTERN SAVANNAH SPARROW.—A specimen was taken by Taylor June 22. Upon examination it was found that the intestinal tract of the bird was literally filled with parasitic worms. Both small round worms (Nematodes) and tapeworms (Cestodes) were present, although unfortunately the parasites were not preserved and fully identified. One tapeworm measured almost three inches long. Apparently the infection was so chronic that the bird had been unable to migrate north.

Passerherbulus henslowi susurrans. EASTERN HENSLow's SPARROW.—Henslow's Sparrow was again found to be a locally common summer resident in 1933 as in 1932 (see Auk for April 1933). Taylor and Arnold Breckenridge, who observed the birds closely through June and July, strongly believed that two or more pairs bred in a certain field although they could find no nests or young. There can be little doubt, however, that North Carolina should be included in the summer range of Henslow's Sparrow in spite of the lack of actual breeding records.—EUGENE P. ODUM AND EDMUND R. TAYLOR, *Chapel Hill Ornithological Club, Chapel Hill, N. C.*

Notes from Eastern Long Island.—*Pagolla wilsonia wilsonia* WILSON'S PLOVER. Two were seen at Mecox Bay, on September 17, 1932, and one collected. Another was seen on the shore of Gardiner's Bay on August 27, 1933. There are but two other recent records of this species for Long Island and very few old ones.

Pisobia bairdi. BAIRD'S SANDPIPER. One seen August 23, 1930, at Shinnecock Bay, another on September 17, 1932, at Bridgehampton, and a flock of at least eighteen on September 16, 1933, after a hard storm, at Mecox Bay. A single bird was also seen on August 23, 1933, at Easthampton.

Erolia testacea. CURLEW SANDPIPER. Since collecting a specimen of this species in 1923 and learning how to recognize it in the field, I have seen it three times on Long Island—October 11, 1930, at Easthampton, a single individual; September 13, 1932, one at Mecox Bay; September 17, 1932, two at Bridgehampton. All were seen at close range and carefully differentiated from the Red-backed Sandpiper, with which it is most likely to be confused.

Tryngites subruficollis. BUFF-BREASTED SANDPIPER. One seen at Bridgehampton, September 27, 1930 and on October 11, three associated

with Golden Plovers one of these was collected. Single birds were also seen on August 7 and October 15, 1933, at Montauk Point.

Limosa fedoa. MARBLED GODWIT. One was seen on Shinnecock Bay, at Southampton, on July 30, 1933, not seen previously since August 18, 1919, when one was collected at Nepeague Beach.

Limosa haemastica. HUDSONIAN GODWIT.—One seen at Bridgehampton on September 17, 1932, and three at Mecox Bay, during the violent storm of September 17, 1933.

Phalaropus fulicarius. RED PHALAROPE.—Two seen at close range in the surf at Easthampton, September 9 and 10, 1932.

Hydroprogne caspia imperator. CASPIAN TERN.—Since 1929 I have added fourteen fall records of this species for eastern Long Island but it would appear that it is now a regular spring migrant as well. I have noted it on six out of twelve field trips in May, 1932, and four out of seven in May 1933, all records with the exception of one on May 28, 1933, were between May 5 and 16.

Rynchops nigra nigra. BLACK SKIMMER.—Two noted at Easthampton on September 18, 1930, a pair on September 17, 1932, and a flock of five on August 3, 1933.

Tyrannus verticalis. ARKANSAS KINGBIRD.—One was carefully identified on September 17, 1930, and another on September 20, 1933, both at Montauk.

Vireo philadelphicus. PHILADELPHIA VIREO.—Three seen at Easthampton on September 17, 1932, and two more at Amagansett on September 18.

Chondestes grammacus (subsp.?) LARK SPARROW.—Three seen; on Shinnecock Bay, August 11; Mecox Bay, August 28 and Montauk October 1, 1932. This strikingly marked bird offers no difficulties in specific identification and the first of the above was recognized by my son and myself as it dashed across the road in front of our automobile. I realize that it should have been collected to determine its subspecific identity.

Junco oreganus (subsp.?). A Junco typical of the *oreganus* group was seen at Easthampton in company with many *J. hyemalis*, on October 8, 1932. It displayed clearly the rufous saddle.—W. TOD HELMUTH, 3rd, 667 Madison Ave., New York.

Additional Notes on the Wintering Birds of Chenier au Tigre, Louisiana.—Chenier au Tigre on the Gulf Coast of Vermilion Parish, Louisiana, has been a favorite collecting spot of mine for the past fifteen years. I returned to the region this past winter with my family and we spent from December 28, 1933, to January 6, 1934, wandering along the ridge and in the nearby marshes. A constant watch was kept for birds which were not recorded in the "Notes of the Winter Birds of Chenier au Tigre, Louisiana" (Auk, 1928, pp. 271-283) and several were added to the list, as noted below.

The winter was extremely mild; many species which were common in 1928 were not observed, and I have never seen Ducks so scarce as they were on this trip.

Hydranassa tricolor ruficollis. LOUISIANA HERON.—A few were seen January 4 in the marsh at the west end of the ridge.

Anas rubripes rubripes. RED-LEGGED BLACK DUCK.—Several were seen back of the ridge and a handsome male was taken January 4.

Grus americanus. WHOOPING CRANE.—Three have wintered in the marsh west of the Chenier for some years. The trappers reported them again this season. Lionel Le Blanc, a trapper who should know these birds, states he saw seven about December 16.

Rallus elegans elegans. KING RAIL.—A dozen birds were taken on January 1, 3, and 5 to determine the relative abundance of the King and Clapper Rails. All were this form.

Coturnicops noveboracensis. YELLOW RAIL.—I flushed one on December 28.

Colaptes auratus semipalmatus subsp. WILLET.—Several were seen daily and fifteen were observed January 3 on a six mile hike along the beach. The breeding form of the Chenier is *semipalmatus*.

Totanus flavipes. LESSER YELLOW-LEGS.—Four birds were observed on several occasions in a moist area in part of our headquarters, the last time being on January 5.

Larus philadelphia. BONAPARTE'S GULL.—Four flew along the beach January 5, the first I have seen in Louisiana. Although they were out of gun range, the white line along the outer edge of the wing was very evident.

Crocethia alba. SANDERLING.—A few stragglers were observed along the beach each day, and a small flock of a dozen birds on January 3.

Antrostomus carolinensis. CHUCK-WILL'S-WIDOW.—My daughter flushed the first of this species that I have seen, January 2, from among the palmettos. It flew silently and swiftly among the live oaks, disappearing behind a screen of grey spanish moss.

Telmatodytes palustris dissaëptus. PRAIRIE MARSH WREN.

Telmatodytes palustris thryophilus. LOUISIANA MARSH WREN.

Marsh Wrens were abundant in the dense stands of tules. A few specimens were collected and both races were represented, with the local breeding form the most numerous. In addition to the above, Dr. Oberholser identified a male taken January 2, and one taken at Pilot Town, La., October 28, 1928, as *iliacus*.

Anthus spinoletta rubescens. AMERICAN PIPIT.—A few were seen daily along the beach and one was taken, January 5.

Sturnus vulgaris vulgaris. STARLING.—One of the surprises was to find this a common wintering bird of the Chenier. They were seen flying swiftly over the live oaks on several occasions. No doubt they find an abundance of food in the fields. One was taken for record on January 2.

Dendroica pinus pinus. PINE WARBLER.—A female was collected January 5.

Geothlypis trichas ignota. FLORIDA YELLOW-THROAT.—Yellow-throats were common in the marsh; the single one taken was *ignota*. We have a

specimen, a female, taken on the Chenier March 10, 1931 which Dr. Oberholser considers *typhicola*.

Richmondia cardinalis cardinalis.—EASTERN CARDINAL.

Richmondia cardinalis magnirostris.—LOUISIANA CARDINAL.

Common in the mesquite along the Gulf. A few specimens were collected and Dr. Oberholser identified all of them as *magnirostris*. Two males and one female, however, have very small beaks, in fact, they are smaller than those of some of our northern birds. They are not so large as those of breeding birds which we have from the Chenier, and I believe them to be migrants of the northern form.

Passerculus sandwichensis subsp. SAVANNAH SPARROW.—These small Sparrows were not so common as formerly but dark specimens resembling *labradorius*, typical of those mentioned in the previous paper, were taken January 5. They have been sent to James L. Peters for determination.

Ammospiza caudacula nelsoni. NELSON'S SPARROW.—A few were observed in the marsh, January 3, under good light conditions. I have observed them commonly in the early spring.

Ammospiza maritima fisheri. LOUISIANA SEASIDE SPARROW.—Common in certain favorite spots. A small series was collected on January 5.—A. M. BAILEY, *The Chicago Academy of Sciences*.

Florida Bird Notes.—The following notes on a few species of birds observed at Sarasota, Fla., March 1 to 21, and at Pompano, Fla., March 22 to 28, 1934, seem worth placing on record as supplementary to data in Howell's 'Florida Bird Life,' 1932.

Calidris canutus rufus. KNOT. A number on the open Gulf beach at Sarasota; flock of about 25 and probably as many as 50 all told there March 18. All were in gray winter plumage, and the presumption is they were wintering birds.

Sturnus vulgaris vulgaris. STARLING.—Two or three about the roof of the hotel at Sarasota for two or three days only, March 2 and 3, are of interest as showing the southward spread of this introduced species. This is perhaps 140 miles southwest of the nearest record for the Starling in Florida, or 200 miles southeast of the nearest west coast record plotted on Howell's distribution map for 1931.

Dendroica fusca. BLACKBURNIAN WARBLER.—A single Warbler, probably this species, observed at Sarasota March 6, not seen again. The date seems much too early for a migrant, and Howell says 'probably a few winter in extreme southern Florida.' There is little doubt in my mind as to the identity of this Warbler, and the record is also interesting in connection with that of the Baltimore Oriole seen a few days previous in the same locality.

Icterus galbula. BALTIMORE ORIOLE.—A single bright plumaged bird observed at Sarasota March 1, not seen again. Howell says 'occasionally seen in winter.'

Melospiza melodia subsp. SONG SPARROW.—Single birds occasionally seen and heard at Sarasota. One in song at Pompano, March 22, presumably a late date for this far south. Howell says 'uncommon or rare in the southern part' of Florida.—DAVID G. NICHOLS, *Garden City, N. Y.*

Some Recent Ohio Records.—The following notes are from records of field work done by the writer during the last three years in various sections of Ohio. They include a number of species infrequently observed in this state and hence are submitted for record.

Colymbus grisegena holboellii.—HOLBOELL'S GREBE.—One bird, the first recorded from this region for several years, observed on O'Shaughnessy Reservoir, north of Columbus, April 10, 1934. Several observers reported very large Grebes from the same place during the preceding week but had been unable to make positive identification.

Egretta thula thula. SNOWY EGRET.—One individual observed several times during the day of August 23, 1933, above Griggs Reservoir north of Columbus. This bird was seen by several observers and compared with the many American Egrets and the two Little Blue Herons found in the vicinity.

Florida caerulea caerulea. LITTLE BLUE HERON.—An adult (blue plumage) seen at O'Shaughnessy Reservoir by Floyd B. Chapman and the writer on August 28, 1933. During the invasion of the summer of 1930 and subsequently, not a single bird of this species in the adult plumage was reported in Ohio.

Chen hyperborea hyperborea. LESSER SNOW GOOSE.—One individual with 16 Canada Geese, studied by Dr. Robert B. Gordon, Floyd B. Chapman and the writer on O'Shaughnessy Reservoir, November 8, 1930.

Chen caerulescens. BLUE GOOSE.—One bird with eight Canada Geese at O'Shaughnessy Reservoir, March 21, 1933.

Melanitta deglandi. WHITE-WINGED SCOTER.—Six birds (three pairs), recorded by William Ireland, Jr., and the writer on O'Shaughnessy Reservoir, March 25, 1932.

Oidemia americana. AMERICAN SCOTER.—Four males studied at close range on O'Shaughnessy Reservoir by Dr. H. G. Metcalf and the writer, February 26, 1933.

Cathartes aura septentrionalis. TURKEY VULTURE.—One seen and another collected at Fredericktown, Knox County, Ohio, on December 24, 1932. This was an immature male with black down on head. I know of no other definite winter records in Ohio north of Columbus.

Coragyps atratus atratus. BLACK VULTURE.—One individual seen along the Mohican River near Greer, Knox County, April 10, 1932. This is the most northerly record known to me for Ohio and is about 60 miles north of the nearest breeding locality.

Astur atricapillus atricapillus. EASTERN GOSHAWK.—One, February 22, 1934, near Sunbury, Delaware County, feeding on a frozen rabbit.

Pluvialis dominica dominica. AMERICAN GOLDEN PLOVER.—A rare migrant at Columbus but locally abundant a few miles northwest in the

prairie areas of Madison, Union and Marion counties where the following records have been obtained. 1930: Apr. 12, (23), May 2, (23). 1932: Apr. 17, (16), Apr. 30, (12), May 7, (6), Sept. 4, (11). 1933: Apr. 16, (11), Apr. 22, (18), Apr. 26, (90), Apr. 27, (6), May 5, (8). 1934: Apr. 17, (8).

Colaptes auratus. WESTERN WILLET.—During the afternoon of May 13, 1933, Milton B. Trautman, Paul Forsthoefel and the writer, pursued five of these wary birds as they flew no less than a total of ten miles from pool to pool along the west shore of Grand Reservoir. Mr. Trautman was eventually successful in collecting a single specimen.

Acanthis linaria linaria. COMMON REDPOLL.—A flock of 22 just south of Fredericktown, Knox County, on February 27, 1934. This seems to be the only recent record from central Ohio, as most of the birds entering the state do not move far south of the Lake Erie shore.

Ammospiza caudacuta nelsoni. NELSON'S SPARROW.—Two individuals in a cattail marsh, near Westerville, May 7, 1933.—LAWRENCE E. HICKS, Department of Botany, Ohio State University, Columbus, Ohio.

Notes from the Chicago District.—*Larus hyperboreus*. GLAUCOUS GULL.—A specimen was taken at Chicago, March 14, 1934, and is now in the N. W. Harris collection, Field Museum of Natural History, Chicago, Ill. According to Dwight's 'Gulls of the World,' this specimen is about nineteen months old. It accompanied about 2,000 Herring Gulls which were feeding on schools of minnows in the lagoon formed by Northerly Island at Twelfth Street and Lake Michigan.

Chen caerulescens. BLUE GOOSE.—One was taken from a flock at Calumet Lake, Chicago, Ill., October 21, 1933. It is an immature bird of the year, the color of the feet and beak being slaty-black.

Of the flock of about thirty-five birds, not more than seven were in the same plumage, the remainder being considerably whiter or of different shades and were thought at the time to be Lesser Snow Geese.

A heavy flight of Geese was moving southward over this area October 20 and 21.

Casmerodius egretta. AMERICAN EGRET.—In Chicago, August 24, 1933, a flock of nineteen was seen arising from the shallow water at the north end of Lake Calumet heading southwest, probably to a roost, as they were daily visitors to the lake. It was interesting to note that the forty or more Great Blue Herons (*Ardea herodias*) which were also feeding at this place left at about five o'clock in the evening, while the Egrets remained for an additional hour and a half. Both flocks departed in the same general direction.

Micropalama himantopus. STILT SANDPIPER.—An immature male was collected at Lake Calumet, Chicago, Ill., August 20, 1933. It was taken at a city garbage dumping ground, where several other species of shore birds were gorging themselves on the abundant supply of fly larvae.

Pisobia fuscicollis. WHITE-RUMPED SANDPIPER.—A specimen of this species, infrequent in this vicinity, was collected at Delavan, Wisconsin,

from a flock of Pectoral and other Sandpipers feeding in a shallow creek bottom, October 19, 1930.

Coturnicops noveboracensis. YELLOW RAIL.—While combing the shallow marsh-land at Waukegan, Ill., in company with Mr. J. S. White, an adult female Yellow Rail, which was reluctant in flushing, was collected among the short weeds on a sandy slope bordering the marsh. An examination of the stomach contents revealed that the bird had been feeding upon a variety of weed seed and various insects, including a large grasshopper which could, only partially, enter the stomach.—A. J. FRANZEN, *Field Museum Nat. Hist., Chicago, Ill.*

Notes from Central Illinois.—The captures of the following birds in central Illinois seem to be worthy of record. Mr. Leland A. Quindry of Chicago showed me skins of the last two species listed and has kindly allowed me to incorporate their data in this note.

Aquila chrysaetos canadensis. GOLDEN EAGLE.—A few years ago I saw in a Chicago taxidermist's shop a fine female which was shot near Lacon, Marshal County, Illinois, November 9, 1928, by a farm hand of a Mr. Hitchcock. It was said to have taken two of Mr. Hitchcock's chickens daily for six days previous to its capture.

Vireo bellii bellii.¹ BELL'S VIREO.—I secured the male of a pair in Champaign County, June 2, 1933. It is now in the University of Michigan Museum of Zoology.

Passer montanus montanus. EUROPEAN TREE SPARROW.—A female with enlarged ovary was obtained by me in English Township, near Fieldon, Jersey County, on April 8, 1928. The specimen is now in the Museum of Vertebrate Zoology at Berkeley. Although Gault² has listed this species from four Illinois counties, he does not say whether it was collected.

Ammodramus savannarum australis. GRASSHOPPER SPARROW.—Quindry took a male at Champaign on the remarkable date of January 9, 1932.

Aimophila aestivalis bachmanii.¹ BACHMAN'S SPARROW.—A male was secured by Quindry on April 2, 1932, near Champaign.—PIERCE BRODKORB, *Museum of Zoology, Ann Arbor, Michigan*.

Type Localities of Townsend's "Columbia River" Birds.—Although Audubon gave the type locality of the Black Oyster-catcher (*Haematopus bachmani*) as the "mouth of the Columbia river," and it so appears in the A. O. U. 'Check-List', Townsend distinctly stated in his 'Narrative' (p. 349) that his specimen was shot near Puget Sound by his friend Dr. William Fraser Tolmie of the Hudson Bay Company, and presented to him. He was anxious to give to it the name of its discoverer, but he was overruled by Audubon, who preferred to honor his own friend. In view of Townsend's disappointment, it is probable that he took a

¹ Double "i" used at author's request—Ed.

² Check List of Birds of Illinois, 1922, p. 63.

peculiar satisfaction in naming Tolmie's Warbler after Audubon had mistaken it for another species.

Townsend can scarcely be censured for failing to localize many of his types more definitely than "Columbia River," since the country was unsettled by the whites and few localities named; but now there can be little excuse for the stereotyped "Columbia river—Fort Vancouver," as the type locality for more than a dozen species described by him or by Audubon for him; especially when the forested area and definite dates or even approximate time of the year, are mentioned. It should be well known that during the most of the autumn of 1834 and the spring and summer of 1835, Townsend made the brig "May Dacre" his headquarters and that many of his types were undoubtedly taken in the immediate vicinity. This vessel was moored bow and stern to a natural wharf of basalt known as Warriors' Point, near the lower mouth of the Multnomah or Willamette river, Oregon, from which Wyeth transferred his stores to Fort William.—FRANK L. BURNS, *Berwyn, Pa.*

Letters Concerning Wallace, Newton and Tristram.—It was my pleasure sometime since to pick up from a New York book-dealer two volumes bearing the book plate of Canon Tristram. They were presentation copies of Wallace's 'Geographical Distribution of Animals' given by the author to Tristram. They had not been cut completely, and in them were two letters to the noted former owner that may be of interest to ornithologists. The first was from Alfred Russell Wallace, the second from Alfred Newton. That from Wallace follows:

The Dells, Grays, Essex.
January 13th. 1874

My dear Tristram

If you should happen to be in Europe I hope you will be able to spare me half an hour to look over the enclosed rough list of genera of SYLVIIDAE and put it a little into shape.

I am trying at a book on Geog. Distributions of *Animals*. As it is a large subject, I treat mainly of *Families*,—& of course I want to know what are the limits of each *family*, & what genera most naturally go in it. Now taking the following families *to be Families*, and to be near each other: Turdidae, Sylviidae, Muscicapidae & keeping Motacillidae quite apart, the question arises what are the limits of *Sylviidae*?, & I believe you can answer this question as well as any man. I therefore turn beseechingly to you.

I have put down on the accompanying paper,—1st. all the genera of Sylviidae in Jerdon's '*Birds of India*' (omitting Motacillinae) 2nd. some additional European genera. 3rd. Additional African genera, from Sharpe's Catalogue, 4th. Australian genera said by Jerdon to be probably *Sylviidae*.

Now you would greatly oblige me by,—1st. crossing out all genera which are *not Sylviidae* & saying *what* they are: 2nd. bracketing together

all names which you think are *subgeneric* so as to form *natural genera*. 3rd. adding any *Sylviine* genera omitted: 4th. arranging the whole into what you consider *natural groups*, or subfamilies by numbering or otherwise.

As *no two* writers appear to agree about this family I am hopelessly puzzled, & if you will guide me, I shall implicitly follow you.

With kind remembrances to Mrs. Tristram

Believe me

Yours very faithfully

Alfred R. Wallace"

Rev. Canon Tristram.

The envelope is postmarked at London—E. C. 12 JA 2[?] 74. It is addressed to "Rev. Canon Tristram F.R.S. | Greatham Vicarage | West Hartlepool | Durham."

Much racier, but far less readable,—owing to the chirography—is the letter from Alfred Newton bearing on the same subject but written nearly fourteen years later. After the lapse of years Tristram evidently is curious still as to the relations that puzzled Wallace. The Newton letter follows:

22 Oct. 1887[?]

"MAGDALENE COLLEGE
CAMBRIDGE

My dear Tristram

I have just got your letter (but too late to answer by tonight's post) & thank you for the hints therein contained.

I doubt if any one can at present make a satisfactory division between *Turdidae*, *Sylviidae*, & *Muscicapidae*—still your proposed grouping is to my mind far better than that of the B. M. 'Catalogue'—not that even this opinion is to be thought very favourable, for the arrangement of the B. M. 'Catalogue' is simply disgraceful. I am sure it would be more to the credit of ornithologists if they would frankly admit their inability to classify some groups, & put their disputed genera as I have suggested in alphabetical order. It is not a question of "shirking" a difficulty [;] it is honestly owning its existence & the impossibility of coping with it in our present state of opinion.

I question whether *Gerygone* is of the *Sylviidae* at all—but time will shew. *Miro* &c I think are, & *Saxicolina* at that.

Bradypterus & *Eremomela* are genera on which I can't venture to pass an opinion. *Cisticola* seems as if it required more than generic separation—*Regulus* I hold to be nearest to *Phylloscopus* &c. I have been told that the position it holds in the B. M. 'Cat.' is due to its having been wholly forgotten at the proper time!

What would you give as the distinguishing characters of your Family "Accentoridae"? For the life of me I have never been able to understand the fuss people have made about keeping them in *Sylviidae* [.]

Copsychus, *Cittocincla*, (please don't write "*Kittacincla*") & *Thamnobia* are Turdine in many respects—but equally Sylviine in as many more—It is just these & a few other forms which incline me to merge the two so-called "Families."

As for nest-building, *Hypolais*—not *Hippolais* by the way, since (as Bonaparte said) "*il ne s'agit point de chevaux!*"—is as wholly different from *Phylloscopus* as its eggs, & indeed so far as I know everything except its being a "leaf-bird" in habits and having a coloration to match.

Within limits, the more genera you suppress the better. I will send for the proof of my article [;] I only wish I could delegate the writing of it to you.

I can't understand your saying in 'The Ibis' that your specimen of *Zosterops praetermissa* had not been in spirits. All Bewsher's collection to the best of my recollection came in spirit, because he could not himself skin & had not a skinner with him in Anjuan!

Yours very truly
Alfred Newton.

We have a young * * * come here who has an eye for birds. A few days ago he fished out a *Dafila spinicauda* in the market, which was not bad of him, though he thought it was a hybrid between Pintail & Widgeon. It is said to have been shot at Lynn, but I don't want to put it into the "British" list."

Mention of the article in 'The Ibis' is in reference apparently to H. B. Tristram's "On an Apparently New Species of *Zosterops* from the Island of Anjuan, Comoro Group" (The Ibis, October, 1887, p. 369). The collection of birds mentioned is apparently that of C. E. Bewsher, 1879. The row of asterisks indicates the name of a noted British ornithologist. The date of the article on *Zosterops* species? serves to confirm the uncertain chirography of Newton's date as here given.

Interwoven as the letters are with one of the greatest works of one of the greatest zoologists, and giving some clear views of the back of the stage machinery it would seem unfair to withhold them from the public.—A. L. PICKENS, 208 East Washington Road, Greenville, S. C.

RECENT LITERATURE.

Peterson's 'Field Guide to the Birds.'—Field ornithology in North America has been revolutionized by the development of the high-powered binoculars, while a new generation of bird students has arisen who have no desire or need for collecting specimens. Curiously enough, however, our literature has failed to keep full pace with this change of method and attitude. Many of our popular books have, it is true, added notes on "field characters" to the time-honored detailed descriptions of specimens "in the hand," but the art of field identification which has been brought to such a high stage of perfection by our leading field students has not been given the attention to which it is entitled. Mr. Peterson, in the little book¹ before us, attempts to supply this lack and with notable success.

He states frankly that his book is "designed to complement the standard ornithological works" and to furnish field marks by which the live birds of eastern North America may be "run down by impressions, patterns, and distinctive marks, rather than by anatomical differences and measurements." Only the outstanding characters peculiar to a species as compared with its near relatives are given, which is just what the student of the live bird demands. Formerly he must needs work these out for himself from a long and detailed description and was very often misled by placing undue reliance upon unimportant characters.

As an example of how tersely a bird may be described in terms of field marks, we might say that a Magnolia Warbler is a Warbler with yellow, black streaked breast, and a white band across the *middle* of the tail; indeed the last character alone will distinguish it at any season from any other of our many Warblers. We must still, however, depend upon the standard works and their colored plates to get a general idea of the appearance of all of our Warblers and to learn what a Warbler is. Then we are prepared to make good and intelligent use of Mr. Peterson's little book.

His book is most serviceable, and at its best, in the treatment of the water birds which have of recent years come into their own in attracting the general interest of our bird students who previously had devoted their attention almost exclusively to the land birds. Water birds must, in most cases, be studied at a distance and in varied lights which render it very difficult to distinguish details of color. A knowledge of a few prominent field marks, however, such as are given on the pages of this little book, will often render identification easy without considering color.

Mr. Peterson is fortunate in possessing sufficient artistic ability to bring out these field marks in original drawings, which are in black and white as they should be, while all the species of the same group are represented in

¹ *A Field Guide to the Birds Giving Field Marks of All Species Found in Eastern North America.* Text and illustrations in color and in black and white by Roger Tory Peterson. Boston and New York, Houghton Mifflin Company. The Riverside Press, Cambridge, 1934. Pp. i-xxi + 1-167. Price \$2.75.

exactly the same position which facilitates comparison. The Ducks, for example, are all shown, in one series of drawings, as we see them sitting sideways on the water, while in another they are depicted on the wing. The Gulls are all shown in a hovering position so that size, and extent of black and gray markings, may at once be compared. In the Sparrow plates little arrows point to characteristic and distinctive markings.

In his text the author mentions also characteristic actions, notes, and usual habitats, but leaves seasons and dates of occurrence to the standard works. There are also colored plates of the Warblers, the more brightly colored Grosbeaks, Tanagers, Orioles, etc., the figures being all side views facing to the left and necessarily very small, but arranged so that similarly colored species are close together.

Few books are free from error and in the present work the author's knowledge of field identification seems to be far ahead of his acquaintance with plumages. He says, for instance, that the young of the Towhee and of the Black-throated Blue Warbler are like the females while as a matter of fact in both species the adult plumage (except for slightly duller primaries) is acquired at the post-juvenal molt so that in the autumn adult and young males are alike as are adult and young females. The author's use of the terms "young" and "juvenile"—indefinite words at best—is sometimes confusing and it is unfortunate that the use of the exact terms proposed by Dr. Dwight are not more generally used today. In some species mention is made of the juvenal plumage, while in others—as the Goldfinch and Cowbird—it is omitted. These, however, are but minor faults and are shared by other authors as well, while they are but incidentally concerned with Mr. Peterson's real objective. On the general conception of the work and its admirable consummation we heartily congratulate him. We feel sure that a proper use of the volume will make for more accurate identifications and the elimination of many errors that undoubtedly result today from the sight records of over zealous field ornithologists. Sight records have come to stay and will form an increasingly important part of ornithological data but the beginner must not think that, even with the aid of Mr. Peterson's excellent book, he can instantly recognize every bird in the off-hand manner of the expert with years of experience behind him. He should heed Mr. Peterson's statement, which we strongly endorse, that accurate field identification is a "matter of seeing a bird often enough and knowing exactly what to look for" and, also, that a thorough acquaintance should be made with a state or local list, so that an observer can state off-hand the comparative rarity of a species and the dates between which it is likely to be seen. Without this knowledge his sight records will receive doubtful recognition and their publication may only tend to obscure accurate knowledge instead of adding to it.—W. S.

Brand's 'Songs of Wild Birds.'—If anyone thinks that nothing new is possible in the way of bird literature let him examine this interesting

little book. Mr. Brand, early realizing the importance of a knowledge of bird song to the bird student and also the years of field study necessary to become familiar with the songs of the species found in even a limited area, conceived the idea of "collecting" bird songs for study much as the earlier ornithologists collected the birds themselves and their successors their photographs.

The photography of sound, which is practically what is done in making the sound films which accompany modern motion pictures, is a difficult operation even in a studio, but the recording of bird song in the open, where all sorts of complicating noises may develop, is far more difficult, especially when we consider that most songs are by no means loud at the distance necessary to record them without disturbing the singer.

With tireless patience and many experiments, however, Mr. Brand finally evolved an apparatus which, fitted up in a "sound wagon," could be taken from place to place wherever a singing bird might be located, and its song "collected." Once secured it was possible to make records for reproduction on a phonograph so that anyone could, by playing these records, familiarize himself with the songs of the birds in a fraction of the time necessary to learn them in the field.

The result of Mr. Brand's labors is an attractive little volume¹ explaining how his song records are obtained, with a discussion of the "How and Why of Bird Song" and short descriptions of the songs of some thirty-five familiar birds with appropriate quotations from the works of leading writers on the subject. Then in a pocket inside the back cover of the book we find two double faced records from which all of the songs may be reproduced. We should understand clearly that these are not whistled reproductions such as have been made in the past, nor songs from caged birds, but actual songs of wild birds taken in their natural surroundings.

The interest in Mr. Brand's records is enhanced by the intrusion of natural sounds that were not anticipated when the songs were collected. Thus in the record of the Thrasher's song one detects a few notes from a Towhee which happened to be nearby, while in another are interpolated the caws of a passing Crow.

Mr. Brand has supplied another "ornithological tool" to make more thorough the training of the field ornithologist and, as in the case of the binocular glass and the motion picture camera, it will certainly lead to an increase in ornithological knowledge. Aside from the scientific and educational value of his work, he has provided pleasure to many already familiar with the songs of our birds but who will greatly enjoy hearing them in their homes, just as they delight in the photographs or "movies" of wild bird life.

We feel that all bird lovers will be greatly indebted to Mr. Brand for the pleasure that he has made possible and for the aid that he has supplied in learning to recognize bird song.—W. S.

¹ *Songs of Wild Birds.* By Albert R. Brand, Associate in Ornithology American Museum of Natural History. Thomas Nelson and Sons, New York, 1934. Pp. 1-91. Price \$2.00.

Stuart Baker's 'Nidification of Birds of the Indian Empire.'—

The third volume of this excellent work¹ is now before us and maintains the high standard set by its predecessors. It completes the Passeres and covers also all of the Coraciiformes. Besides the description of nest and eggs, compiled from personal experience and the works of various authors, there is much detailed information on distribution and habits of the 704 species and subspecies enumerated in the volume, so that it becomes a valuable work of reference to ornithologists at large as well as to oölogists.

The illustrations comprise a view of the Diyng River, "a haunt of the Broadbills and Pittas," and nests of seven species of birds, all from photographs by Col. R. H. Battry and Capt. R. S. P. Bates. We congratulate Mr. Baker upon the progress of his work.—W. S.

The Birds of Nippon.—The third part² of Prince Taka-Tsukasa's sumptuous work has appeared. It comprises pp. 27-56 of the introduction, which are devoted to a history of Japanese ornithology, and pp. 129-168 of the main text covering the three races of *Phasianus colchicus* and *Gennaues swinhoii*. There are three colored plates and three photogravures, two of scenery and one showing the natives of Formosa in dancing regalia, with head-dresses of tail feathers of Swinhoe's Pheasant.

The historical sketch of Japanese ornithology is very interesting, dating back to the Shinshu Yokyo, the oldest book on the subject, printed in Japan in the year 818 A. D. although mention of birds occurs in still earlier works. An extensive natural history of Japan was published as early as 1713, comprising, in a later edition, no less than 48 volumes of which two dealt with birds. A standard work on cage birds, a subject in which the Japanese have long been interested, appeared in 1710. The first work on Japanese birds by a European author was Kämpfer's 'Historia Imperii Japonici,' 1727, based upon his visit to the country in 1690. Siebold, who lived at Nagasaki from 1823 to 1830, later published his 'Fauna Japonica,' the 'Aves' by Temminck and Schlegel forming the basis of modern Japanese ornithology. Nothing was known of the birds of other parts of Japan until Cassin's report on the birds of the Perry Expedition, 1852-1858. Until this time the policy of exclusion had prevented natural history studies being made in the empire by foreigners.

The beautiful make-up and typography of Prince Taka Tsukasa's work is fully maintained in this number.—W. S.

Weygandt's 'The White Hills.'—Dr. Cornelius Weygandt's delightfully written books on the 'Wissahickon Hills' of Philadelphia, and the

¹ The Nidification of Birds of the Indian Empire | By | E. C. Stuart Baker, C.I.E., O.B.E., F.Z.S., etc. | Volume III | Ploceidae—Asionidae | With eight plates | London: | Taylor and Francis, Red Lion Court, Fleet Street, E. C. 4, | 23rd April, 1934 |. Pp. 1-568. Price 30 shillings.

² The Birds of Nippon | By Prince Taka-Tsukasa | [titles etc.] Volume I | Part 3 | History of Japanese | Ornithology | Order Galli | H. F. & G. Witherby | 326 High Holborn, London, W. C. 1 | Yokendo | 7 Motozono-Cho, Kojimachi-Ku, | Tokyo | 11th April, 1934.

'Red Hills' of the so-called "Pennsylvania Dutch" have already been mentioned in these columns. His latest volume¹ deals with the White Mountains of New Hampshire, where he for years has had a summer home, and their inhabitants. While not so rich in bird lore as its predecessors it is full of that appreciation of nature which characterizes the author's work. In two chapters, "The Cock of the Woods" and "Crows on the Barn" the birds take first place.

It is interesting to see this Pennsylvania writer trespassing into a field which New Englanders have long considered peculiarly their own.—W. S.

Priest's 'Birds of Southern Rhodesia.'—Just as we go to press we have received the second volume² of Captain Priest's excellent work on the birds of southern Rhodesia. It fully maintains the standard of the former volume both in style and make-up. There are ten color plates and 172 text figures.

The four Orders comprising (1) the Rails and their allies; (2) the Shorebirds, Sand-grouse and Doves; (3) Cuckoos, Parrots, etc., and (4) Rollers to Woodpeckers are covered in the present volume. The Passerine families will be treated in succeeding volumes.

We congratulate Captain Priest upon the progress of his work which will be a great boon to ornithologists of Rhodesia as well as to visitors from elsewhere.—W. S.

Brooks and Wetmore on North American Birds.—Another installment of Major Brooks' paintings of North American birds, with text by Dr. Wetmore, has appeared in the May issue of the 'National Geographic Magazine' (pp. 575-596). It covers the Titmice, Nuthatches, Creepers, Wrens, Dipper, Kinglets and Gnatcatchers. The color plates are very pleasing, on gray tinted backgrounds with the birds in little groups, after the fashion of Thorburn's 'British Birds,' with branches of trees or sprays of flowering shrubs and bits of hazy scenery.

Dr. Wetmore in his sketches of the various species has combined brief notes on field experiences with general information on relationships and habits, which makes interesting and instructive reading. Why it is necessary to present such valuable matter under such modern newspaper publicity headlines it is hard to understand—Dr. Wetmore's contribution appears as "Winged Denizens of Woodland, Stream, and Marsh" while Major Brooks plates are termed "Blithe Birds of Dooryard, Bush, and Brake!" This we presume is the work of an editor not of the authors.—W. S.

DeSchaunsee on 'Birds from Siam and the Southern Shan

¹ The White Hills. Mountain New Hampshire, Winnepesaukee to Washington. By Cornelius Weygandt. Henry Holt and Company, New York. 1934. Pp. i-xi+1-309. Price \$3.50.

² The Birds of Southern Rhodesia. By Captain Cecil D. Priest. Volume II. William Clowes and Sons, Limited, London and Beccles. 1934. Pp. 1-553. To be obtained at 94 Jermyn St., London, S. W. 1. Or the Herald Book Store, Salisbury, Southern Rhodesia. Price £ 1. 10.

States.¹—Mr. deSchauensee made a third expedition to Siam, in the interests of the Academy of Natural Sciences of Philadelphia, from December, 1933, to March, 1934, and obtained upwards of 2000 specimens which he has reported upon in the present paper.¹ The annotated list which makes up the bulk of the report covers 504 species or subspecies, ninety-eight of these were collected in the Shan States of which twenty-five were not obtained in Siam.

No new forms are described in this paper but two obtained on the expedition were previously published (cf. Auk, 1934, p. 268). Thirty-six species were added to the 337 previously known from the Chieng Mai district.

The paper opens with an interesting itinerary in which there are descriptions of the country traversed and accounts of the habits of the more conspicuous birds. In the part which follows all the specimens are listed, with dates and localities, and comments on relationship of the various forms, as well as measurements where variation was noted. Eight photographs of scenery are presented on four halftone plates and there are three other views (unfortunately without captions) and a map, in the itinerary.

Mr. deSchauensee has made a very valuable contribution to Siamese ornithology and his wide personal experience with the birds of the country makes his discussion of the relationship of the species of exceptional value. —W. S.

Roberts on the Birds of Trinidad.—Mr. H. Radclyffe Roberts of the Academy of Natural Sciences of Philadelphia, accompanied by Messrs. George R. Clark and W. Wedgwood Bowen, spent the months of July and August, 1931, in Trinidad, making a collection of the birds which has been presented to the Academy, where Mr. Roberts studied it. In the present paper² he has listed the 167 species represented, with his field notes and comments on the relationship of many of the species. In order to make the list more generally useful he has added all of the species obtained by others and brought the nomenclature up to date, so that the paper constitutes a complete catalogue of the bird life of the island. Numbers in parentheses refer to Chapman's 'List' of 1894, in which 304 species are given; Mr. Roberts lists 320.

The paper is carefully compiled and the author's notes add not a little to our knowledge of Trinidad birds. Both resident and visiting ornithologists will find the pamphlet very useful. —W. S.

Swarth on the 'Birds of Nunivak Island, Alaska.'—The present paper³ is based upon the work of the late Cyril Guy Harrold who made a trip

¹ Zoological Results of the Third DeSchauensee Siamese Expedition, Part II. Birds from Siam and the Southern Shan States. By Rodolphe Meyer deSchauensee. Proc. Acad. Nat. Sciences, Phila., LXXXVI, 1934, pp. 165-280. May 18, 1934.

² List of Trinidad Birds with Field Notes. By H. Radclyffe Roberts. Tropical Agriculture, [Govt. Printing Office, Port of Spain, Trinidad] Vol. XI, No. 4, pp. 87-99, 1934.

³ Birds of Nunivak Island. By Harry S. Swarth. Pacific Coast Avifauna. Cooper Ornithological Club, Los Angeles, Calif., No. 22, March 31, 1934. Pp. 1-64. Price \$2.00.

to this island, previously unvisited by ornithologists, from June 30 to November 6, 1927, in the interests of the California Academy of Sciences, and secured a collection of over 550 birds and much information of value. Mr. Swarth lists 116 species in his report but this also includes material from Akutan and Unalaska obtained on the way north. He discusses the Glaucous Gulls, Purple Sandpipers, Winter Wrens, and Savannah Sparrows at some length, presenting opinions which will be of great value to the A. O. U. Committee on Classification and Nomenclature.

In the introductory pages the author discusses the avifauna of the Aleutian Region as a whole and calls attention to its importance as an area of differentiation, and also to the fact that in many groups we have a distinct subspecies of a wide ranging species occurring side by side with a form that we regard as specifically, or even generically, different, although obviously of common origin. In considering the Palaearctic element in northwestern North America he lists no less than 44 species that have wandered over from Asia and considers that many, now regarded as merely casual, will be found to be of regular occurrence. Conversely he lists nineteen Nearctic species which have wandered over to Asia.

He endorses William Palmer's suggestion that the Aleutian Islands, those of Bering Sea, and the coast regions of Alaska and Northern Asia constitute a distinct zoological subregion which he called the Aleutican (Avifauna of the Pribilof Islands, 1899). A photograph of Mr. Harrold forms the frontispiece to the report.

Mr. Swarth has made a valuable contribution to Aleutian and Alaskan ornithology and a worthy memorial to an able field naturalist—W. S.

Murphy on Birds and Hurricanes.¹—The tropical hurricane of late August, 1933, had an extraordinary effect in scattering sea birds throughout various parts of the eastern United States. Leach's Petrels in large numbers were distributed throughout central New York and Pennsylvania. One or more Wilson's Petrels were taken on Adirondack lakes and elsewhere. Still more remarkable, however, was the transportation of a Madeira Petrel to Ottawa, as recorded by Mr. Taverner in the January Auk, and the capture of a South Trinidad Petrel, *Pterodroma arminjoniana*, at Ithaca. The last constitutes a first record for North America. (see p. 417)

Dr. Murphy traces the course of the cyclonic disturbance from its birth-place near the Cape Verde Islands and concludes that the two species of sea birds from the eastern tropical Atlantic had probably been carried within the "eye" of the storm for a very long distance, while the North Atlantic species of Petrels had been carried in at right angles to its path by the rotary draft blowing toward the center. The author also suggests that an inquiry to correlate the North American records of tropical sea birds with the paths of tropical cyclonic storms throughout a long period might be highly illuminating. In fact, he has completed such a study since the appearance of the present note.—J. P. CHAPIN.

¹ Stray Sea Birds and Atlantic Storm Tracks. By Robert Cushman Murphy. The Geographical Review, January 1934. Pp. 151-152.

Kitchin's 'List of the Birds of Washington.'—This distributional list¹ is a credit to the author and to the Pacific Northwest Bird and Mammal Society which has published it. It is well printed and remarkably free from typographical errors. 'The total number of species and subspecies definitely recorded, on the basis of a specimen actually taken in the state, is 389, while there are added in a hypothetical list 39 others whose occurrence may be expected. There is a brief statement of character of occurrence of each form and details of distribution when necessary. The nomenclature wisely follows that of the A. O. U. 'Check-List' for, in a list such as this, uniformity is more important than personal opinion in matters of names.

Mr. Kitchin's 'Check-List' will be a valuable work of reference to ornithologists generally.—W. S.

Alvarez on the Birds of Uruguay.—In this paper² the author, a former Director of Agriculture, presents a list of 113 birds of Uruguay with brief accounts of their distribution, nesting habits, and food. It should arouse much interest among the people of the country in the value of their birds and in the importance of their protection, while it furnishes ornithologists elsewhere with additional information on the bird life of a region concerning which the literature is not very extensive.—W. S.

Eaton on the Migratory Movements of Herring Gulls.—Mr. Eaton's studies of the migration records of the several colonies of Herring Gulls of eastern North America, published in 'Bird Banding,'³ is completed in the April issue and he presents his conclusions.

He finds three well marked populations (1) the Atlantic, breeding from Massachusetts to New Brunswick, of which the first year birds tend to winter on the Gulf coast; (2) the Laurentian, breeding along the St. Lawrence, with no habit of true migration in the first year birds at least; (3) the Lacustrine, breeding in the Great Lakes region and wintering in the first year in the Great Lakes drainage system, some birds passing to the Gulf and others to the Atlantic Coast.

In attempting to explain these apparent facts the author suggests that the Gulls were in the main forced to breed much farther south during the last glacial period than at present and that the habit of migration developed when they began to reclaim their original breeding range; that as recent evidence seems to show that the St. Lawrence area was probably not completely glaciated by the "Wisconsin" ice sheet, the Herring Gulls of this area were perhaps never forced to desert their old breeding grounds. His conclusions are well worthy of careful consideration and the data that

¹ Distributional Check-List of the Birds of the State of Washington. By E. A. Kitchin. Northwest Fauna Series, No. 1, February, 1934. Pp. 1-28. Price 50 cents. (Leo K. Couch, Room 101, Old Capitol Bldg., Olympia, Wash.).

² Observaciones Biologicas sobre las Aves del Uruguay por Teodoro Alvarez, Ingeniero Agronomo, Ex Director de Agronomia. Anales del Museo de Hist. Nat. de Montevideo 2a. Serie. Tom. IV, No. 1, November, 1933. Pp. 1-50.

³ Bird Banding, IV, No. 4, V, Nos. 1 and 2. October 1933-April, 1934.

he has tabulated furnish an important basis for further work on the migration of these birds.—W. S.

Biological Survey Duck Maps.—The U. S. Biological Survey has issued a series of maps showing the breeding area and region of shooting for twenty-four of the Ducks and Geese most popular with sportsmen. These are sent out to editors of various publications with the privilege of using them as copy on condition that the statements that accompany them be also published.

This is an excellent way of disseminating accurate information regarding our water-fowl and nothing will show more convincingly the decrease in the breeding areas of these birds, and the consequent decrease in the numbers of the birds themselves, than a glance at these maps. The resultant publicity, too, should make every sportsman aware of the exact situation which the Ducks face today and enlist his support of any measures that seem necessary to save them from extinction regardless of his personal inconvenience. Let us hope that the maps and accompanying statement may receive the careful attention that they deserve.—W. S.

Teaching Units of the Emergency Conservation Committee.—The Emergency Conservation Committee has recently published two excellent 'Teaching Units' prepared by Ellsworth D. Lumley of the Biology Department of Great Falls High School, Great Falls, Montana. One of these deals with "Hawks" and the other with "Shortage of Waterfowl" and both are designed for school use. The former presents not only reliable data on the food of Hawks taken from Fisher's 'Hawks and Owls' and other similar publications, but emphasizes the injustice of the campaign of so-called sportsmen against these birds, the wastefulness of bounties, etc., etc.

The Waterfowl 'Unit' covers the evils of draining marshes, baiting, the ethics of sport, the wasteful methods of certain gunners, the principles of game laws, etc.

The objects of the two pamphlets are tersely stated to be: I. (a) To become acquainted with our Hawks so as to be able to identify each group; (b) To learn the true value of our Hawks to the farmer and the sportsman; (c) To learn the harm done when bounties are offered for the killing of these birds. II. (a) To come to a correct solution as to why our Waterfowl have decreased so rapidly in the last 20 or 25 years; (b) To understand the true meaning of sportsmanship.

Then there are series of "assignments" for scholars to follow up with the aid of the information presented in the 'Unit' and that to be obtained from the books and articles cited in the bibliography. The intention is to stimulate class discussion and the preparation of essays on all branches of the subject. There is a brief discussion of the Crow problem at the end of

¹ Conservation Series. Teaching Units. I. The Shortage of Waterfowl; II. Hawks; both by Ellsworth D. Lumley. Price 10 cents each. Emergency Conservation Committee, 734 Lexington Ave., New York.

the Water-fowl 'Unit' and we understand that other 'Units' are to appear shortly dealing with "Eagles and Owls" and with "Fish-eating Birds."

While much has been published in the way of popular information and instruction on bird protection, the recent activities of sportsmen's organizations in the thoughtless destruction of various birds supposed to destroy "game," and the difficulty in making the public at large realize man's part in the decrease in water fowl, make it imperative that full knowledge of these topics be added to the courses in conservation conducted in our schools and the pamphlets here noticed seem to be an excellent effort in the right direction. The greatest opportunity for conservation lies in education in the schools, for the children are open minded while the sportsmen often are not, and it is the children of today who will frame the laws of tomorrow.—W. S.

Russian Economic Ornithology.—A few recently received papers illustrative of this field are herewith reviewed.

V. I. Tichvinsky¹ discusses analyses of 370 stomach contents representing nine species of Russian wild Ducks, four of which are the same as species occurring regularly in the United States. Two tabulations are presented, one of spring and the other of autumn foods. It is evident that the items are much the same as those found in studies of American wild-fowl. The pondweeds, bullrushes, bur-reeds, waterlilies and smartweeds are prominent among the vegetable, and snails, water beetles, dragonflies and caddis-flies among the animal items of food. The Gadwall, as with us, is a great consumer of green vegetation, and the Shoveller of mollusks; other species have less pronounced tastes. The text is in Russian, a summary in Esperanto.

A statement² is made about natural enemies of the ground-squirrel in which the Kite, Buzzard, Kestrel, Golden and White-tailed Eagles and Long-eared Owl are credited with preying upon the animal and eight other birds of prey not known to do so are named. Text in Russian, summary in English.

Birds of prey are also credited³ with causing a rapid decrease in severity of an outbreak of the Steppe Lemmer. The birds most prominently mentioned are *Milvus koshun*, *Circus macrurus*, and *Asio accipitrinus*.

A paper by Jarkoff and Teploff⁴ is based on nest studies, includes analysis of remains of prey about the nest, disgorged food, and the contents of stomachs, during the years 1924 to 1930. The interesting statement is

¹ The Food of Aquatic Game Birds. By V. I. Tichvinsky. Records Volga-Kama Biologic-Trade Station, 1a, 1931. Pp. 169-202.

² The Biology of the Reddish Ground-squirrel (*Citellus rufescens* Keys. et Blas). By V. I. Tichvinsky. Records Volga-Kama Biologic-Trade Station, 2, 1932. Pp. 46-89, 19 figs.

³ On the biology of the Steppe Lemmer (*Lagurus lagurus* Pall.) and experiments for its control. By N. M. Sewenov. Journ. Agr. Sci. of southeastern U. S. S. R., 8(2), 1930. P. 394.

⁴ Materials on the Food of the Birds of Prey. By J. V. Jarkoff and V. P. Teploff. Records Volga-Kama Biologic-Trade Station, 2, 1932. Pp. 138-201, 17 figs.

made that raptors prefer the front part of the body of prey, and that the frequently observed weakness and death of the youngest nestling is due not only to reduction in quantity of food obtained but also to its quality because the front part of the body is usually eaten by the older nestlings which seize it first.

The authors divide the raptors studied into two groups, (a) those that prefer prey of a definite group and take other only casually, and (b) those habitually taking a mixed diet. In the first class are the mouse-eaters, *Cerchneis tinnunculus*, *Bubo bubo*, *Synium aluco*, *Asio flammeus*, and *Asio otus*; the bird-eaters *Astur palumbarius* and *Accipiter nisus*; a fish-eater *Pandion haliaetus*; and insect-eaters *Erythropus vespertinus* and *Pernis apivorus*. In class "b" are mouse and bird eaters as *Aquila clanda*, *Circus aeruginosus* and *Circus pygargus*; mouse and insect eaters as *Athene noctua*, *Nyctale tengmalmi*, *Glaucidium passerinum*, and *Scops giu*; and omnivorous species as *Buteo buteo*, *Milvus korschun*, and *Haliaetus albicilla*. Text in Russian, summary in English.

A report on the Gray Crow¹ was based on field study and 170 stomach analyses, and the results are presented according to seasons. In May and June the predominant food is insects of which more than half are of injurious and the others of neutral sorts. Some mice also are eaten. In July fishes and mollusks caught in drying pools left by spring floods, as well as insects (69 per cent harmful) are consumed. From August to November grain is freely eaten, some of it from crops. In March and April grain, this time chiefly waste, predominates but many mice are eaten and a variety of refuse. The author believes that the Crow is generally useful to agriculture and as a scavenger, but that it does some damage to hunting interests. Text in Russian, summary in English.

1070 pellets of Magpies from winter roosts along the Kama River were studied by Vlasoff and Teploff.² Leading items of food found in the numbers cited were, rodents 684, moles and shrews 38, birds 5, Anura 3, fishes 124, insects 63, besides a considerable variety of seeds. The authors state that under the conditions of this study the Magpie was an omnivorous but completely useful bird and that Magpie killing by hunting groups should not be permitted. The usefulness of old Magpie nests to such beneficial birds as the Long-eared Owl and Kestrel also is noted. Text and bibliography of 14 titles in Russian, summary in English.—W. L. M.

Shorter Publications.

Allen, Arthur A.—A New Bird for North America. (University State of N. Y. Bulletin to Schools, XX, No. 13, March 15, 1934.)—Capture of a

¹ Economic Importance of the Gray Crow (*Corvus corniz* L.) in the Lower Kama Valley. By D. J. Aspeasoff. Records Volga-Kama Biologic-Trade Station, 2, 1932. Pp. 202-227, 4 figs.

² Food of the Magpie—*Pica pica* L. By A. A. Vlasoff and V. P. Teploff. Records Volga-Kama Biologic-Trade Station, 2, 1932. Pp. 228-240.

Trinidad Petrel (*Pterodroma arminjoniana*) near Ithaca, N. Y., on August 24, 1933.

Allen, Francis H.—Charles Wendell Townsend. 1859-1934.—(Privately printed.)

Bailey, Alfred M.—Wanderers of the Seas. (Natural History, May-June, 1934.)—On the Albatrosses of Laysan Island with many original photographs.

Gabrielson, Ira N.—Baby Styles in Birdland. (American Forests, May, 1934.)—Numerous photographs of young birds.

Grange, Wallace B.—Winter Feeding of Wild Life on Northern Farms. (U. S. Dept. Agr. Miscellaneous Publ. No. 159.)—Excellent suggestions.

Grange, Wallace B.—Improving the Farm Environment for Wild Life. (U. S. Dept. Agr. Farmers' Bull. No. 1719.)—Valuable suggestions on cover management, replanting with vegetation, and making roadsides attractive to birds as well as to man. Also a strong defence of the Hawks and Owls. "No wholesale destruction of Hawks and Owls should be tolerated," says the author, "such destruction is not wild-life management, but ignorant or willful disregard of facts."

Hall, F. S.—Studies in the History of Ornithology in the state of Washington (1792-1932). Part III. (The Murrelet, January, 1934.)—An interesting review of the work of David Douglass and the birds that he discovered or collected.

Harper, Francis.—The Okefinokee Wilderness. (Nat. Geogr. Magazine, May, 1934.)—A most interesting account of life in this famous swamp with incidental mention of birds.

McAtee, W. L.—Conservation of Game or of Wild Life—Which? (Scientific Monthly, February, 1934.)—An article that every one should read—especially sportsmen! The writer, a Government expert on wild life conservation, sums up the situation when he says: "Hunting being a luxury there is no validity in arguments for sweeping aside everything that interferes with it."

O'Roke, Earl C.—A Malaria-like Disease of Ducks. (Univ. of Michigan School of Forestry, Bulletin No. 4, 1934.)—Account of study and experiments in control of the protozoon parasite *Leucocytozoon anatis* which is the cause of the disease.

Patten, Bradley Merrill and Kramer, Theodore C.—The Initiation of Contraction in the Embryonic Chick Heart. (Amer. Jour. Anat., November, 1933.)

Phillips, John C.—Migratory Bird Protection in North America. (Special Publication Amer. Comm. International Wild Life Protection, I, No. 4, 1934.)—A chronological résumé of the subject.

Rogers, Charles H., and Deignan, Herbert.—Birds New to the Kingdom of Siam or Otherwise Noteworthy. (Proc. Biol. Soc. Washington, April 2, 1934.)

St. Louis Bird Club.—In Memoriam Otto Widmann. (St. Louis Bird

Club Bulletin III, No. 1, No date.)—Tributes, bibliography and portrait.

Shannon, Wayland E.—Notes on the Bird Life of Merritt's Island [Florida]. During the 1932 and 1933 Seasons. (Florida Naturalist, VII, No. 3, April 1934.)

Soper, J. Dewey.—Interesting Bird Records for Southern Baffin Island. (Canadian Field Naturalist, April and May, 1934.)

Swarth, Harry S.—The Bird Fauna of the Galapagos Islands in Relation to Species Formation. (Biological Reviews [Cambridge, England] IX, No. 2, April, 1934.)—A general discussion of the origin and nature of variation in the bird life of the islands. The author considers the islands to be of volcanic origin and their fauna to have come from elsewhere, possibly in part from the West Indies. The main group of land birds which has proved such a puzzle to systematists he explains as "a fine example of diversification unhindered by competition."

Sleijser, Austina J.—Results of Bird Banding by the Museum of Natural History at Leiden. (Zool. Mededeelingen's Rijks Mus. Nat. Hist. Leiden XVI, Afl. 3-4. 1933.)

Wetmore, Alexander.—A Systematic Classification for the Birds of the World, Revised and Emended. (Smithson. Misc. Coll. Vol. 89, No. 13.)—The changes from the author's former edition are the establishment of the Penguins as a distinct super-order; the uniting of the Percidae and Phasianidae; the recognition of a distinct family Rostratulidae for the Painted Snipe; the reversal in position of the Parrots and Cuckoos; and in the Passeriformes, the uniting of the Bowerbirds with the Birds of Paradise, of the Paramythiidae with Dicaeidae; Enicuridae with Turdidae; Aerocharidae with Vangidae; and Graculidae with Sturnidae; also the establishment of a distinct family Paradoxornithidae for the Parrot-bills.

Zimmer, John T.—Studies of Peruvian Birds. (American Mus. Novitates. No. 668, Oct. 23, 1933, and 703, March 15, 1934.)—The first of these papers contains a study of the genera *Taraba* and *Sakesphorus* with a new form described in each, while the second has to do with *Hylophylax*, *Myrmothera*, and *Grallaria*, with one, two, and two new forms, respectively. The detailed discussion of species will prove of the greatest help to students of the Ant Thrushes.

The Ornithological Journals.

Bird-Lore. XXXVI, No. 2. March-April, 1934.

Bird-Notes from Bed. Part II. Spring. By Mark F. Emerson.—Purple Finch, Rose-breasted Grosbeak, Robin and Catbird come to a window feeding shelf and are photographed.

A Morning's Migration. By Myrtle Broley.—A spring "wave," and flock of 2000 Snow and Blue Geese near Winnipeg.

A Dusky Poor-will as an Overnight Guest. By Emerson A. Stoner.

Tree Swallows at Home in Montana. By Winton Weydemeyer.—With excellent photographs.

A Ground-nesting Flicker. By William A. Paff.—With photograph; nest at Easton, Pa., a slight hollow containing three eggs.

The Red-winged Blackbird is the subject of Dr. A. A. Allen's "autobiography."

Bird-Lore. XXXVI, No. 3. May-June, 1934.

The Ledges of Bonaventure. By Alfred M. Bailey.—With excellent photographs of the Gannet colonies.

The Warblers of the Lilacs. By William A. Gross.—A study of the Yellow Warbler in Maine, with good photographs.

Bird-Notes from Bed.—Summer. By Mark F. Emerson.

The Diary of a Flicker. By G. A. Hinnen.

Dr. A. A. Allen has an interesting illustrated "autobiography" of the Virginia Rail.

The Condor. XXXVI, No. 2. March-April, 1934.

Song Sparrows and Territory. By Margaret M. Nice.—Twenty-eight young birds settled on an average within 320 yards of their birthplace.

Recent Occurrences of the American Egret in the San Francisco Bay Region. By Emerson A. Stoner.—A steady increase during the last nine years.

An Appreciation of Donald Ryder Dickey. By Harry Harris.—With two photographs and a bibliography.

Further Observations upon the Bird Life of Death Valley. By Joseph Grinnell.

Comments upon Systematics of Pacific Coast Jays of the Genus *Cyanocitta*. By James Stevenson.—The writer recognizes *C. s. paralia*, from the coast region of Oregon and southern Washington, a form not considered distinct by the A. O. U. Committee.

The Arizona State List Since 1914. By Anders H. Anderson.—List of Additions.

The Condor. XXXVI, No. 3. May-June, 1934.

Gonzalo Pizarro's Trail to the Land of Cinnamon and Its Denizens. By Robert T. Moore.—Experiences with Hummingbirds in Ecuador.

Summary of a Record of Duck Shooting on the Suisun Marsh. By Emerson A. Stoner.—The Tule Shooting Club Record 1885-1901.

Winter Weights of Golden-crowned and Fox Sparrows. By Jean M. Linsdale and E. L. Sumner, Sr.—There are two peaks one in mid-winter and a higher one just before the spring migration; and, on the average, weight increases during the day.

The Wilson Bulletin. XLVI, No. 1. March, 1934.

Recollections of the Prairie Chicken and the Sharp-tailed Grouse in Northwestern Minnesota. By Charles E. Johnson.

Incubation Period of the Killdeer. By Albert F. Ganier.

Unilateral and Bilateral Ovaries in Raptorial Birds. By F. L. Fitzpatrick.

A Letter to the Game Officials of the State of Connecticut. By Myron E. Story.

Further Additions to the List of Birds Victimized by the Cowbird. By Herbert Friedmann.

The Birds of Berlin and Harwood Townships, Cass County, North Dakota. By Gale W. Monson.

The Murrelet. XIV, No. 3. September, 1933.

Studies in the History of Ornithology in the State of Washington. Part II.

The Lewis and Clarke Expedition. By F. S. Hall.—With list of types secured in Washington and of species observed. An extremely interesting article.

The Murrelet. XV, No. 1. January, 1934.

Studies in the History of Ornithology in the State of Washington. Part III. David Douglas, Pioneer Naturalist on the Columbia River. 1825-1833. By F. S. Hall.—Another of Prof. Hall's admirable articles with portrait of Douglas and picture of old Fort Vancouver.

The Oölogist. LI, Nos. 1, 2, and 3. January, February, and March, 1934.

Pennsylvania and New Jersey Nesting Dates for 1933. By R. F. Miller. (January.)

A Surprised Cardinal. By J. Warren Jacobs.—Yellow-billed Cuckoo's egg in Cardinal's nest. (February.)

Hawks, Eagles and Vultures of Northwestern Ohio. By Homer F. Price.—Lists many nests found, including those of the Owls as well. (March.)

Bird-Banding. V, No. 2. April, 1934.

Some Measurements and Weights of Live Birds. By Mrs. K. B. Wetherbee.

The Opportunity of Bird-Banding. By Margaret M. Nice.—The author claims that many bird-banders catch "as many birds as they possibly can, simply attach the numbered band and that is the last they see or hear of the vast majority of their subjects." They "have not progressed beyond the earliest stage" apparently believing that banding is merely a means of studying migration. They "could add greatly to our knowledge of bird-life if they would study a few birds carefully." This seems to be the trouble with oölogy, photography, and other special branches of bird study as well as bird-banding. It is comparatively easy to develop an oölogist, a bird photographer, a bird-bander, etc., but it is another matter to produce a real ornithologist, such as Mrs. Nice, with the proper idea of scientific research and, perhaps, we should not expect to produce very many.

The migratory Movements of Certain Colonies of Herring Gulls. By R. J. Eaton (see review p. 414 antea).

Migratory Movements of Fox Sparrows. By Maurice Broun.

Eastern Bird Banding Quarterly. I, No. 1. May, 1934.

With this little journal the Eastern Bird Banding Association again issues "an organ." The present issue contains much advice and suggestion on bird banding, and articles on Osprey migration; fluctuation in the numbers of birds; trees and shrubs to attract birds; longevity problems, etc. Walt Batezel is chairman of the publication committee. All members of the Association will receive this journal in addition to 'Bird Banding'; membership dues \$2.00, to the Secretary, Frank B. Foster, 1911 Franklin Trust Bldg., Philadelphia, Pa.

The Migrant. V, No. 1. March, 1934.

Nesting Records of Birds at Athens, Tenn. By H. P. Ijams and L. A. Hofferbert.

A Woodcock's Nest. By Cynthia C. Counce.

Derivations of Ornithological Nomenclature. By Bruce P. Tyler.—Those interested in this subject should consult Coues' classic 'Check List,' second edition, where the matter is carried much further and discussed in a most interesting and instructive way. The present paper unfortunately is not free from typographical errors.

Annual Christmas Census, 1933.

Iowa Bird Life. IV, No. 1. March, 1934.

The Bald Eagle as an Iowa Bird. By P. A. DuMont.

Many local notes.

The Nebraska Bird Review. II, No. 2. April, 1934.

Notes on Some Logan County Birds. By Earl W. Glandon.

Many local notes and report on migration.

The Raven. V, No. 2-3. February-March, 1934. [Mimeographed.]

Account of the Fourth Annual Meeting of the Virginia Society of Ornithology. Many notes on Virginia birds and an account of a Florida trip.

News from the Bird Banders. IX, No. 2. April, 1934. [Mimeographed.]

Contains reports on the activities of the Western Bird Banding Association.

Inland Bird Banding News. VI, No. 1. March, 1934. [Mimeographed.]

Contains an obituary notice of Norman Criddle; South Dakota Notes, and Migration data for Canton, Ohio.

Saint Louis Bird Club Bulletin. III, No. 3, 4, and 5. March to May, 1934. [Mimeographed.]

Devoted to the activities and observations of the Club.

The Flicker. VI, No. 2. May, 1934. [Mimeographed.]

Many notes on birds of Minnesota and North Dakota. Published by the Minnesota Bird Club.

The Night Heron. I, No. 3. March, 1934. [Mimeographed.]

Published in St. Louis, Mo. Contains notes on Mid-Western Ornithology.

The Ibis. (13th ser.) IV, No. 2. April, 1934.

Birds of Southern Sahara. Part III. By George L. Bates.

Notes on the Birds of Central and South-East Iceland. By Brian Roberts.

The Travels and Collections of Johan August Wahlberg, 1810-1856: a Pioneer Naturalist in South Africa. By Nils Gyldenstolpe.—With portraits, journals and list of new species based upon his specimens, with corrected type localities.

On the Forms of *Leucosticte arctoa*. By E. V. Koslova.—*L. a. sushkini* (p. 298) from northern Mongolia is described as new.

Notes on Ruppell's Warbler (*Sylvia ruppelli*). By R. F. Meiklejohn.—Account of its nesting, in Crete.

The Birds of Northern Portuguese East Africa. By Jack Vincent. Part III.

Additional Notes on the Birds victimized by the Shiny Cowbird (*Molothrus bonariensis*). By Herbert Friedmann.

Systematic Notes on East African Birds. Part II. By C. W. Mackworth-Praed and Claude H. B. Grant.

Ernst Johann Otto Hartert. By Lord Rothschild.—An interesting biography with portraits and bibliography.

A Further Note bearing on the Date when the Domestic Fowl was first known to the Ancient Egyptians. By Percy R. Lowe.—Traced back to the reign of Tuthmosis III, 1501-1447 B. C.

Four New Birds and a New Genus from Madagascar. By Finn Salomonsen. *Newtonia brunneicauda inornata* (p. 382); *Leptosomus discolor anjouanensis* (384); *Treron australis zenia* (p. 386); *Mentocrex kioloides berliozii* (p. 386); *Lemurolimnas* (p. 388) type *Zapornia watersi* Bartlett.

The Domestic Fowl in pre-Roman Britain. By Dorothea M. A. Bate.—Description and discussion of bones of *Gallus* from the Colchester excavations of pre-Roman date.

Bulletin of the British Ornithologists' Club. CCCLXXV. March 7, 1934.

W. B. Alexander gives an account of Heligoland and its Bird Observatory.

David Bannermann describes *Illadopsis cleaveri poensis* (p. 107) from Fernando Po; N. B. Kinnear, *Spelaornis souliei sherriffi* (p. 107) from East Bhutan; G. M. Mathews, *Diomedea epomophora longirostris* (p. 112) from the South Atlantic.

Messrs. Grant and Mackworth-Praed discuss type localities of various African birds.

Bulletin of the British Ornithologists' Club. CCCLXXVI. March 29, 1934.

G. M. Mathews describes *Loomelania* gen. nov. type *Procellaria melania* Bp.

Bulletin of the British Ornithologists' Club. CCCLXXVII. April 30, 1934.

David Bannerman describes a collection from Ashanti, Gold Coast;

N. B. Kinnear remarks on an expedition to Bhutan; G. Carmichael Low discusses the Ringed Plovers and comes to the conclusion that there are but two races, *Charadrius hiaticula hiaticula* and *C. h. tundrae*. Messrs. Grant and Machworth-Praed discuss a number of species of African Hawks and O. Neumann certain Palaearctic Gulls.

British Birds. XXVII, No. 10. March 1, 1934.

A Natural Experiment on the Territorial Instinct. By Julian S. Huxley.—Detailed observations on Coots and Swans which bring him to the conclusion that "territorial instinct (i. e. male pugnacity while in possession of a territory) will be one of the more important of the factors determining the population of breeding pairs in a given area. Whether it is ever a *final limiting factor* is a theoretical question which it is impossible at the moment to answer."

Report on the British Birds marking scheme for 1933.

The Heligoland Bird Observatory. By W. B. Alexander.—Illustrated.

Problems of Colonization and Increase of Sea-Birds on Great Saltee Island. By R. S. Pollard.—In County Wexford, Ireland.

Notes from Reservoirs and Sewage Farms.

British Birds. XXVII, No. 11. April 2, 1934.

Ornithological Report from Norfolk for 1933. By B. B. Riviere.

The Willow-Tit's Method of Boring its Nesting-Hole. By H. F. Witherby.—Carried the chips some distance away to a tree limb where it broke them almost to a dust.

The Starling Roosts in the East Midlands. By A. Roebuck.—118 roosts located, consisting of from 1000 to 100,000 birds each.

British Birds. XXVII, No. 12. May, 1934.

Some Habits of the Grasshopper Warbler in Sussex. By John Walpole-Bond.

The Avicultural Magazine. XII, Nos. 3, 4, and 5. March to May, 1934.

Notes on New Zealand Birds. By Sydney Porter.—The Kea (March); the Apteryx, Penguin, etc., (May). From 1920-28 bounties were paid for killing 29,000 Keas while according to the author there is no evidence that they ever kill sheep!

Capturing Water Fowl in Africa. By Ronald Stevens. (April.)

An Amateur's Experience in Importing Hummingbirds. By Mrs. Wharton-Tigar. (May.)

The Oologists' Record. XIV, No. 1. March 1, 1934.

The Bald Ibis (*Comatibis eremita*). By Rev. F. C. R. Jourdain.—Account of nesting.

Some Aspects of the Territory Theory. By Desmond Nethersole-Thompson.—Traces the territory theory back to Montagu's 'Ornithological Dictionary' and in commenting on recent critics the author upholds Howard, in the main, and concludes "that territory is not an end but a means to success in reproduction."

Bird Notes and News. XVI, No. 1. Spring, 1934.

A Trip to Corfu and Southern Albania. By F. W. Borman.

The Woodpecker (*Picus viridis*).—With reproduction of a painting by Roland Green.

Many notes on bird protection in England and elsewhere.

The Emu. XXXIII, Part 4. April, 1934.

The Spine-tailed Log-runner (*Orthonyx temminckii*). By K. A. Hindwood.—With color plate by Cayley and photograph of nest.

Thomas Skottowe—Naturalist. By Tom Iredale.—Description of a manuscript and series of paintings prepared in 1813 and now in the Mitchell Library at Sydney. Thirteen are of birds of which three are here reproduced.

New Nesting Records of Glossy Ibis. By R. F. Bailey.

The White-browed Wood-Swallow. By A. F. D'Ombrian.

Lotus-birds [Jacanas] breeding on Hawkesbury River. By James Potter.—With interesting photograph of young showing the enormous toes.

A Tour of the Murrumbidgee Irrigation Area, N. S. W. By R. R. Emerson and G. R. Gannon.

Bird Life between Ullawarra and Onslow, W. A. By A. B. Robinson.

Numerous excellent half-tones from photographs illustrate the articles.

L'Oiseau. IV, No. 1. 1934. [In French.]

On *Neodrepanis*. By Finn Salomonsen.

Studies on Hybridism in the Crossoptilons. By A. Ghigi.—With photographs of crosses between the species.

The Birds of Kwangsi. By K. Y. Yen.—Continued.

Monograph of the Weaver Finches. Revision of the Genera *Euplectes* and *Vidua*. By J. Delacour and F. Edmond-Blanc.—Illustrated with a color plate and maps of distribution; a useful bibliography completes the paper.

Ornithology of Lower Brittany. By E. Lebeurier and J. Rapine.

Notes on the Geographic Distribution of Birds in Transcaucasia. By C. A. Worobiev.

On the Migration of Birds and Fishes. By F. Cathelin.

Defence of the Birds of Prey. By A. Rochon-Duvigneaud.

Alauda. (Ser. 3.) V, No. 4. October–December, 1934. [In French.]

On the Palaeontological Evolution of birds and the Authoritative Value of the Orders. By M. Boubier.

New Forms of the Wren (*Troglodytes troglodytes*). By W. S. Stachanow.—*T. t. tarimensis* (p. 442) northern Kaschgarie; *T. t. krymensis* (p. 445) Crimean peninsula.

Contributions to Russian Ornithology. By G. Dementieff.

New Ornithological Observations in the Eastern Pyrenees. By N. Mayaud.

On a French Ornithological Nomenclature. By H. Jouard.—Subject also discussed in the next number by N. Mayaud.

Reviews of Stemmler's defence of the Eagles and Madon's condemnation of rapacious birds. By A. Rochon-Duvigneaud.

Obituary Notice of Ernst Hartert. By Louis Lavauden.

Alauda. (Ser. III). VI, No. 1. January-February, 1934. [In French.]

The Chromosomes of Birds. By R. Matthey.

Ornithological Notes from the Department of Haute-Savoie. By R. Poncy.

Notes on the Dipper and the Nightjar. By P. Madon.

On the Morphology and Systematics of Certain Shearwaters (Addendum). By N. Mayaud.

A Summer's Notes in Brittany. By Vicomte Eble.

Journal für Ornithologie. Vol. 82, Heft 2. April, 1934. [In German.]

Contribution to the Breeding Avifauna of the Province of Malaga. By Leo v. Boxberger.

Observations on the Food of our Birds of Prey and Owls in 1932. By O. Uttendörfer.

The Eastern Palaearctic Forms of the Peregrine. By B. Stegmann.—*Falco peregrinus caeruleiceps* (p. 227) Gyda Peninsula, west of the Yenisee; and *F. p. gobicus* (p. 235) East Turkestan, are described as new.

On the Arrangement of some West African Kingfishers. By Finn Salomonsen.—*Corythornis cristata* and *Ispidina leucogaster* are referred to *Alcedo* and the subfamilies *Alcedininae* and *Halcyoninae* are merged.

Akinesia Investigations on Titmice. By Gerard Warnke.—Paralysis of the motive nerves causing apparent hypnotic condition. Discussion and bibliography.

The Breeding Habits of *Laterallus leucopyrrhus*. By W. Meise.

The Horned Owl of Thuringen. By Camill Gugg.—Detailed study of a nesting with excellent photographic illustrations.

Birds of the Lihir Island Group. By Otto Meyer.—Bismark Archipelago.—With a list of 73 species.

Ornithologische Monatsberichte. Vol. 42, No. 2. March, 1934. [In German].

The Migration Route of *Culidris temminckii*. By F. Tischler.

On the Eastern Europe Migration of the Partridge. By H. Grote.

Birds' Eggs from Timor and Waigeu. By M. Schönwetter.

Ornithology of the Weyland Mountains in New Guinea.—Many new forms described by Stresemann & Paludan and by Hartert & Paludan and one by Rothschild.

Two new genera are established; *Rhagologus* Stres & Palud. (p. 45) for *Pachycephala leucostigma* Salv., and *Androphobus* (p. 46) Hart. & Palud. for *Androphilus viridis* Roths. & Hart.

Robert Wilson Shufeldt. 1850-1934. By K. Lambrecht.—A biographical sketch.

Beiträge zur Fortpflanzungsbiologie der Vögel. X, No. 2. March, 1934. [In German.]

Observations on the Mating and Nest Life of the Stork (*Ciconia ciconia*).

By E. Schüz.

Nuptial Flight of Terns. By E. Christoleit.

Birds Breeding in the Schönbrunner Zoological Garden. By O. Steinfatt.

On the Phylogenetic Development of Parasitism. By Wolfgang Makatsch.

Beiträge zur Fortpflanzungsbiologie der Vögel. X, No. 3. May, 1934. [In German.]

A Contribution to our Knowledge of the Natural History especially the Breeding Life of the Night Heron. By O. Steinfatt.

On the Biology of Some Eastern Palaearctic Song Birds. By H. Grote.

Something about *Aegithina tiphia scapularis* of Java. By A. Spennemann.

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Many notes on bird migration.

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Ninth Annual Report of the Swiss Ornithological Station at Sempach. (March.)

The Stock-Dove in the Environs of Rothrist. By W. Haller. (April.)

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Many notes on birds of Switzerland.

Organ of the Netherlands Ornithological Club. VI, No. 4. April, 1934. [In Dutch.]

On Recoveries of Birds Banded in the Netherlands. By M. J. Tekke.—Treats of the Tern, *Sterna sandvicensis sandvicensis*.

Banding of the Purple Heron. *Ardea p. purpurea*. By C. G. B. Ten Kate.

Geographic Distribution of the Pycnonotidae. By Snouckaert van Schauburg.

Report on the Banding Station at Wassenaar for 1931-32. By J. P. Bouma and J. C. Koch.

Many notes on birds of Netherlands and obituary notice of Ernst Hartert by R. Snouckaert.

CORRESPONDENCE.

Semi-Centennial Greetings

LONDON, 21ST MARCH, 1934.

To the Hon. Secretary,
American Ornithologists' Union.

Dear Sir,

I am instructed by the President and Committee of the British Ornithologists' Union to inform you that at the General Meeting of the Union held on 14th inst, a resolution moved by the President to the effect that "The British Ornithologists' Union heartily congratulates the American Ornithologists' Union on the celebration of their Jubilee Anniversary and sends their heartiest greetings and best wishes for the continuation of their success and great and increasing influence in the Science of Ornithology" was put to the Meeting and carried with acclamation.

May I add my personal congratulations to the Union of which I have the honour to belong and say how much I, and all British Ornithologists, have appreciated the kind and constant courtesy and help which has been extended to us in our mutual work.

Believe me dear Sir,
Yours very Sincerely,
E. C. Stuart Baker

CHARLOTTENBURG, WILMERSDORFERSTRASSE 74,
Nov. 6TH, 1933.

Dear Dr. Palmer,

I send my most hearty congratulations to the 50th Anniversary of the American Ornithologists' Union and wish it will have a long life of some thousand odd years.

With best greetings to all my friends over there.

Yours very Truly,
Prof. Oscar Neumann

Alleged Excessive Collecting.

April 27, 1934.

Editor of 'The Auk.'

Dear Sir:—

I have been considerably distressed to hear from an ornithologist friend, recently returned from the Pacific Islands, of ruthless and excessive destruction of rare birds by the American Whitney expedition. He tells me they have apparently exterminated the small lory which is only found on a mountain in the interior of Viti Levu killing no less than 47 when permission was given to take 5. 18 specimens of the rare *Pyrrhulopsis personata* were taken, again much in excess of the permit number, and the bird does not appear to have been seen since in a wild state. The Norfolk

Island Parrakeet (*Cyanorhamphus cooki*) has also been decimated or exterminated, and it is feared that great mischief has been done on Antipodes Island and other islands as well.

I trust the report may be exaggerated but my friend seems sure that his information is accurate. The slaughter of rare birds of the parrot family is particularly foolish and deplorable as, if a few pairs had been taken alive, they could easily have been bred in confinement in California where the climate is ideal for avicultural purposes. An abundance of museum specimens could thus have been produced without harm. For some years past, with the aid of a few American friends, I have been endeavoring to encourage the breeding in California of species threatened with extinction in a wild state. The experiment has been successful and would have been *very* successful if our efforts for financial support had not met with an exceedingly poor response. By a rather curious irony if *C. cooki* does still survive it may be as the result of my action in sending a few pairs to California where they are now breeding.

Yours truly,
Tavistock

Editor of 'The Auk.'

On behalf of the American Museum of Natural History, I beg to acknowledge your courtesy in permitting me to reply to the letter which, under date of April 27, 1934, the Marquess of Tavistock writes to you for publication in your pages. In so doing, however, I must express my regret that consideration for his fellow-workers, if not protection for himself, did not induce the Marquess to attempt to confirm the charges he makes against this Museum's Whitney Expedition before giving them publicity. The facts are as follows:

Of "the small lory" which the Marquess states "is only found on a mountain in the interior of Viti Levu" and which we are said to "have apparently exterminated" by "killing no less than 47" specimens, we secured 12 examples all taken during a short one-week trip, proof to those familiar with the difficulties of mountain forest collecting, that the species is by no means rare; nor is it restricted to the island of Viti Levu, but is also found on other large islands of the Fiji group. There are, for example, specimens in the British Museum from Taviuni.

Of the Masked Parrot (*Pyrrhuloxia personata*), we took not only "18" but 26 specimens. However, the work of Beck, our collector, showed that this species is neither rare nor threatened with extinction. Viti Levu, the island it inhabits, exceeds in size the whole of southeastern England (Counties of Kent, Sussex, Surrey and Middlesex) and the greater part of it is still unexplored. That in a short visit Beck could have secured so large a series of this forest-inhabiting species is evidence of its abundance, while the restriction of his labors to a limited part of its range renders it obvious that he could not have seriously affected its numbers.

As for the Norfolk Island Parrakeet (*Cyanorhamphus cooki*), which Beck is said to have "decimated or exterminated" he secured two specimens. The "great mischief" "it is feared" that Beck did on Antipodes Island appears to be restricted to collecting 5 specimens of the island Paroquet (*Cyanorhamphus unicolor*) and two specimens of the Snipe (*Coenocorypha auklandica tristrami*). Incidentally it may be remarked that the existence of 33 specimens of the former and 20 of the latter in the Rothschild Collection has not aroused criticism. Moreover, since Beck's visit to Antipodes Island in 1926, Oliver ('New Zealand Birds' 1930) writes that both this paroquet and snipe are common there.

On the whole, therefore, I believe we may assure the Marquess that his "trust" that the reports to which he so unfortunately gives credence are "exaggerated" is warranted. His concluding suggestion that we breed specimens for our collections has, at least, the merit of novelty. But studies of insular evolution, for which the Whitney Expedition was primarily inaugurated, and also of other phases of geographical variation, based on birds raised in aviaries would not, in our opinion, be acceptable contributions to the science of ornithology.

I confess that I am at loss to understand why persons who make or repeat these charges against the American Museum do not write direct to us for information, rather than to a third person. We have nothing to conceal, and if excess of zeal should have led our collector to violate the ethics of his profession we should be among the first to admit and regret it. Our critics do not appear to be concerned with either the object or the results of an undertaking to which at great expense we have already devoted fourteen years, and which bids fair to occupy as many more. Nevertheless, we hope that they may be interested to learn that there have already been published, chiefly by the American Museum, 44 papers based on Whitney Expedition collections, and that these merely mark the beginning of our studies of this unique representation of island bird-life. Also, we are now preparing to send a second expedition to the Pacific to make paintings and collect accessories for the production of large Habitat Bird groups for a hall in the new Whitney wing of the Museum which will be wholly devoted to a popular presentation of the work of the Whitney Expedition.

June 8, 1934.

Frank M. Chapman,
Curator Dept. Birds,

American Museum of Natural History, New York City.

OBITUARIES.

DR. EDWARD WILLIAM NELSON, President of the A. O. U. from 1908 to 1911, died at the Garfield Hospital, Washington, D. C., after a brief illness, on May 19, 1934, in the eightieth year of his age.

While not a founder of the Union Dr. Nelson was a contemporary of the men who established our Society and one of the last of those who engaged in active exploration of the West following the time of the Pacific Railway Surveys. Indeed there have been few if any who exceeded him

COSMOS CLUB
WASHINGTON, D. C.

November 12, 1933

To the Fellows and members of the
American Ornithologists Union:
Greetings, and the most friendly
good wishes to you all. I regret
exceedingly that I cannot be with
you on this historic occasion.
May the Union go on for the
coming period of fifty years accom-
plishing another great record for
good work done.

Cordially yours

E. W. Nelson

in this field of activity. To Alaska, to various parts of the then little known Southwest, and to every state of Mexico his field work took him and he brought back notable collections which have proved the basis of our systematic research in these regions. His career has been an inspiration to the younger men who followed, while his delightful personality endeared him to all who came in contact with him.

Failing health and other duties have prevented him from taking an active part in the activities of the Union in the past few years but his

interest never flagged as shown by the appended letter, on the occasion of the fiftieth anniversary meeting.

In accordance with the established custom a memorial prepared by one of the members of the Union will be presented at the next meeting.—W. S.

DR. CHARLES WENDELL TOWNSEND, a Fellow of the Union died on April 3, 1934. Dr. Townsend was leader among the group of field ornithologists which has developed in recent years. Always a lover of live birds rather than museum specimens, he spent every available moment in acquiring knowledge of their activities and added greatly to our stock of life-history information.

His enthusiasm was contagious and those who visited with him his favorite home grounds on the Ipswich beaches and dunes will never forget the experience. His delightful writings have brought pleasure to a host of persons who never enjoyed the privilege of his acquaintance.

A memorial upon his life and work will be read at the meeting in Chicago and later appear in 'The Auk.'—W. S.

COLONEL FRANKLIN BRANDRETH, an Associate of the American Ornithologists Union since 1886 and life Associate since 1918, died at his home in Ossining, N. Y., May 25, 1926 in his seventy-eighth year. He was born in Ossining July 2, 1849, the son of Benjamin and Virginia (Graham) Brandreth.

His early education was acquired at Churchill's Military School located in Ossining, and later he attended the Charlier Academy of New York. When seventeen years old he entered into business with his father and continued in the same establishment until his death.

His father purchased a large area in the Adirondacks surrounding a lake, now known as Brandreth Lake, where Franklin went when he was twelve years old. It is not improbable that at this impressionable age being thus brought in close contact with Nature, there was bred within him a love for her varied forms which became more pronounced as he advanced in life. Be that as it may, the great out-of-doors held his keenest interest and delight, with hunting, fishing, or yachting as attractive pastimes. He was wonderfully expert with rifle and shot gun in the field, and equally so with the fly-rod at the lake or stream. His life-long interest in natural history more than equalled his enthusiasm for field sports. His acquaintance with birds was so good, that he was able to detect an unknown stranger at sight, and if secured it often came to the writer for identification. He made special effort to encourage and protect song and other birds about his home, and up to the time of his death he fed the winter birds which came to a shelf outside his bedroom window. He taught

his children to identify the different species of birds that came to their notice.

His love of nature was not confined solely to birds and mammals, for he delighted in the beauty of everything that grew. He always was opposed to lumbering in the Adirondacks, and believed that the way to preserve the forest in that region was to leave it alone, and not by modern theories of scientific cutting.

Franklin Brandreth was of sterling quality, upright, lovable, and as a friend remarked: "one of God's noblemen." His influence in the community was great, he was generous almost to a fault, and with quiet charity helped the poor and distressed. Fortunate was he who had him for a friend.

He was Colonel in the New York State Militia under General Husted. He was a life member of the Shattemuc Yacht and Canoe Club; oldest member of the New York Yacht Club; member of Westminster Kennel Club, Long Island; and Monroe Marsh Club (Mich.). Where for fifty-three consecutive years he and his friend William Sterling shot together.

April 17, 1872, Colonel Brandreth married Miss Pauline Burgess of Poughkeepsie, N. Y., who survived him only two months.

He is survived by four children: Mrs. Beatrice Hahn, Mrs. Fox Conner, Miss Pauline Brandreth, and Mr. Courtenay Brandreth.—A. K. F.

NOTES AND NEWS.

THE FIFTY SECOND Stated Meeting of the American Ornithologists' Union will be held at the Field Museum of Natural History in Chicago, Ill., during the week beginning Oct. 22, 1934.

The arrangements for the meeting will be in charge of the Local Committee on Arrangements comprising the following members: W. H. Osgood, Chairman, A. M. Bailey, Rudyerd Boulton, H. B. Conover, C. W. G. Efrig, S. S. Gregory, W. I. Lyon and R. M. Strong.

The Union in entering on a new half century of progress, has selected Chicago as the place in which to hold its annual meeting where its first convention in the Middle West, twelve years ago, proved highly successful. The convention this year will afford an opportunity for members in the West, who find it impracticable to come East, to take part in a meeting and we trust that many Eastern members will be able to attend. The Union hopes also to have the pleasure of welcoming many representatives of the ornithological organizations in the Mississippi Valley such as the Wilson Ornithological Club, the State societies in Iowa, Michigan, Nebraska and Tennessee, and the various Audubon Societies and bird clubs of the Central States.

It is none too soon to make plans for attending. The Century of Progress Exposition will be open and members can take advantage of the special rates provided in this connection. The Local Committee is arranging several attractive features including excursions to nearby points of interest immediately after the close of the Sessions. A cordial invitation is extended to all members of the Union and others interested in birds to attend the convention. Those who expect to contribute papers to the scientific program should send their titles to the Secretary of the Union, 1939 Biltmore St., N. W., Washington, D. C., *not later than October 1*, and should submit with each title an abstract of not more than 200 words. Further information regarding the arrangements may be obtained from the chairman of the Local Committee, Dr. W. H. Osgood, Field Museum, Chicago, Ill.

THE FOURTH annual meeting of the Virginia Society of Ornithology was held at Alexandria, March 9 and 10, 1934. On the afternoon of Friday, March 9, there was a program of papers by members, followed by the second annual dinner at 7 P. M. Greetings were given by Dr. T. S. Palmer, Secretary of the American Ornithologists' Union, Dr. Alexander Wetmore, Assistant Secretary of the Smithsonian Institution, Dr. Harold C. Bryant of the National Park Service, formerly a member of the Cooper Ornithological Club, from their respective organizations, and a brief talk was given by Mrs. Leo D. Miner of the Audubon Society of the District of Columbia.

On Friday night invitation addresses were given by Dr. Harry C.

Oberholser and Arthur H. Howell, of the U. S. Biological Survey. On Saturday morning the members took a field trip along the Mt. Vernon Memorial Highway from Washington to Mt. Vernon, seeing hundreds of water-fowl along the Potomac.

All officers were re-elected as follows: Ruskin S. Freer, Lynchburg College, Lynchburg, president; Chas. O. Handley, Commission of Game and Inland Fisheries, Richmond, vice-president; Dr. Florence Hague, Sweet Briar College, Sweet Briar, Secretary; John B. Lewis, Amelia, treasurer; Dr. J. J. Murray, Lexington, editor of 'The Raven,' the monthly bulletin of the Society. Mr. M. G. Lewis of Salem and Mr. A. O. English of Norfolk were re-elected members of the Executive Committee.

At the business meeting a resolution was adopted opposing baiting of wild-fowl within 100 yards "of any blind, battery or other device from which these birds may be taken legally."—RUSKIN S. FREER.

THE NINTH Annual Meeting of the Cooper Ornithological Club was held at San Diego, Calif., on March 30 and 31, 1934. There was a large attendance and an exceedingly interesting program. The meeting was under the auspices of the San Diego Society of Natural History and Clinton G. Abbott, president of the southern Division of the Club presided. The annual dinner was held on the evening of the 31st and there was a field trip to the Coronados Islands on April 1.

THE State Legislature of New York has passed two bills extending protection to seven birds not previously on the protected list: Rough-legged, Broad-winged, Red-shouldered, Sparrow and Duck Hawks; Great Blue Heron and Bittern. The bills were drafted and sponsored by the National Association of Audubon Societies.

Why cannot Pennsylvania and other states follow this example? The continued slaughter of these birds as has been pointed out again and again is due to ignorance for which there is no excuse, yet most sportsman's organizations and even State game commissions persist in a policy which will bring a sad day of reckoning sometime in the future.

A NEW Ornithological Society has been founded in Paris known as the "Société d'Etudes Ornithologiques" which publishes as its organ 'Alauda' a quarterly journal, the last issues of which are noticed on pp. 425-426 *antea*.

Requests for information regarding the Society or its publication should be addressed to M. Henri Heim de Balsac, 34 rue Hamelin, Paris, 16°, or to M. Henri Jouard, 3 boulevard Carnot, Dijon, Côte d'Or.

ON June 12, 1934, the museum staff of the American Museum of Natural History, numbering about eighty, together with several personal friends, tendered a luncheon to Dr. Frank M. Chapman on the occasion of his seventieth birthday. It was held in the main bird hall of the museum and was a complete surprise to Dr. Chapman. Brief addresses were made by Dr. Roy Chapman Andrews, Dr. Henry Fairfield Osborn and Dr.

Witmer Stone congratulating Dr. Chapman upon his services to ornithology to which he replied in happy vein recalling his first visit to the museum and various experiences during his forty-six years as a member of the staff. Dr. Robert Cushman Murphy, who was in charge of the arrangements, read a number of letters and telegrams from friends of Dr. Chapman in other cities.

THE DEANE COLLECTION.—For nearly half a century Ruthven Deane had been collecting portraits of ornithologists. In January, 1934, two months before his death, he presented this collection to the Library of Congress with the understanding that it should be fully indexed and kept accessible for use by any persons who might be interested in it. The transfer of the collection had been the subject of correspondence for about eight years but not until the beginning of the present year was the Library in a position to carry out the wishes of the donor in regard to indexing.

The collection comprises about 1800 items representing more than 1000 individuals. Most of the portraits are photographs, many of cabinet size, but there are also halftones, woodcuts, lithographs, and reproductions from magazines and newspapers. In some cases there are eight or ten portraits of the same individual made at different times.

The collection has been built up mainly on the membership of the American Ornithologists' Union. It contains a nearly complete series of portraits of the Founders, Fellows, and Members of the Union with many of the Foreign Fellows and the more prominent Associates. There are also group pictures taken at some of the meetings. To these are added pictures of some of the older ornithologists and many others who were not members of the Union, including artists, authors, collectors, explorers, taxidermists, and persons in whose honor birds have been named.

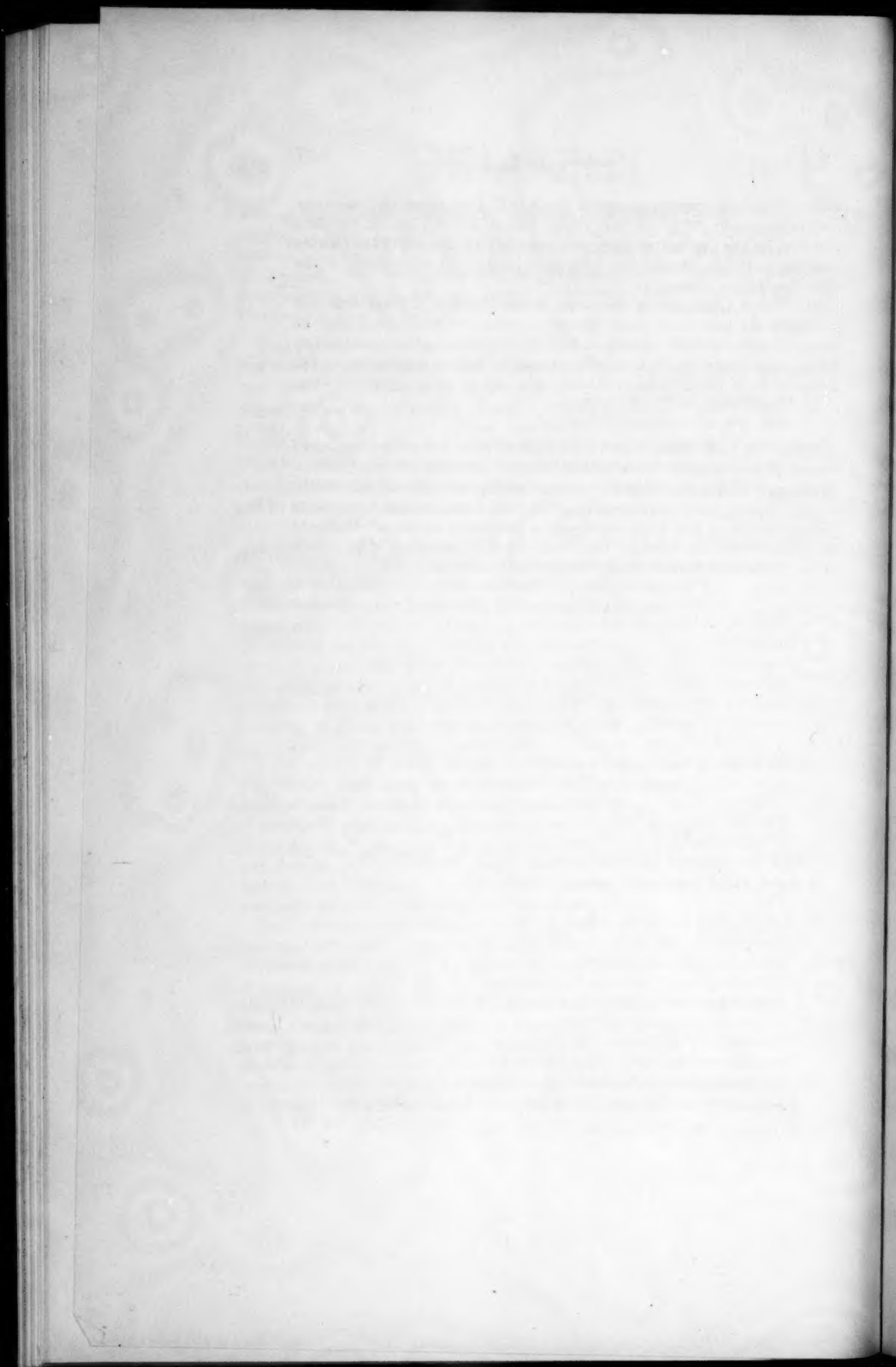
Upon receipt of the collection each picture was carefully examined, accessioned, marked on the back with the Library stamp and a serial number, and placed in an envelope of standard size. A separate envelope is provided for each person and is marked with the full name and the dates of birth and death. Mr. Deane insisted that the names should be as complete as possible and the index cards should bear enough data to identify each individual. In the matter of names this condition has been met as 98 per cent of the names are complete.

Each envelope is accompanied by an index card giving not only the full name of the individual but also the exact date and place of birth and death whenever obtainable, and a reference to a published biographical sketch if any can be found. Other information includes the official position of the individual, college degrees if any, and brief items indicating his activities. In the case of authors, the titles of one or two publications are mentioned, in the case of artists, collectors, or taxidermists the nature of their work and sometimes where it may be found. Naturally an index on such a comprehensive plan will require some time and an immense amount of research for its proper elaboration, but much progress has already been

made. Through the coöperation of the A.O.U. Committee on Biography and Bibliography, of which Mr. Deane was an active member, the data collected by the Committee have been placed at the disposal of the Library and the work of indexing has been done under the supervision of the Chairman of the Committee.

The Deane Collection is deposited in the Division of Fine Arts and arrangements have been made whereby copies of the pictures may be obtained under certain conditions at cost of photographic reproduction. Information regarding these conditions may be had on application to Dr. Leicester B. Holland, Chief of the Division of Fine Arts, Library of Congress, Washington, D. C.—T. S. P.

JUST as we go to press, June 18, we have received the second volume of Peters' 'Check-List of Birds of the World,' covering the Galliformes, Gruiformes, Charadriiformes and several smaller suborders. All ornithologists dealing with systematic research have been looking forward to the appearance of this volume and will be anxious to secure it. It should be ordered from the Harvard University Press, Cambridge, Mass., Price \$4.00. A detailed review will appear in the October issue of 'The Auk.'



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